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LECTURES, MONOGRAPHS AND CASES.

The Medical History of a Three Months' Regiment. By BENJAMIN LEE, Surgeon, 22d National Guard, State of New York.

On the 28th day of May last, the dailies having a second time startled the nation with the heavily-leaded announcement, "The Capital in danger," and a call having come for immediate reinforcements from the militia force of the country, we descended from the editorial tripod, buckled on that most absurd of all instruments, neither a lancet nor a weapon of war, but a clumsy cross between the two, a surgeon's sword, and started for the seat of war with the noble regiment of which we were the principal medical officer. We purpose to give our readers a few of the results of three months of medical observation in the field, trusting that they will be not without interest to all, and not without profit to those who purpose to take charge of the health of our rapidly forming regiments.

Arriving at Baltimore, the Regiment unexpectedly found orders awaiting them to remain in that city. Accordingly, we marched at once to the ground assigned us, a high hill on the eastern side of the city, commanding a view of the harbor, and having a southeasterly exposure; and, although we did not arrive until five o'clock, by nightfall had our tents pitched and our guards posted. During the three weeks of our stay in Baltimore, we had a succession of cold north-

easterly storms and high winds, which made it very trying to men entirely unaccustomed to such exposure. But the precaution of large watch-fires (the U. S. Quartermaster afforded us a liberal supply of fuel) and a cup of hot coffee to men coming off guard on stormy nights, with a little quinine next morning, warded off any serious consequences; only two cases of bronchitis occurring of sufficient severity to make it necessary to give them a sick-leave.

On our first arrival there was considerable difficulty experienced in obtaining a supply of picks and shovels, and in consequence we went several days without properly constructed sinks, and with a very imperfect system of surface drainage in the camp. The floors of the tents were therefore often damp, when they might have been dry, had proper ditches been dug around them; and the low ground in front of us was rapidly becoming foul and offensive. There is perhaps no point on which the surgeon of a regiment just going into the field, especially if it is likely to be for some time in a stationary camp, as is generally the case with a militia regiment, should be more urgent, than that his men are well supplied with tools for policing purposes. They are really of more essential value to the health of a command than medicine-chest or field-case. The soil on which our camp was pitched was a tough, tenacious clay, resembling, when cut, variegated soap, hardening so rapidly on exposure to the air, that the men amused themselves in carving crosses and other objects out of it, to send home to their friends, and quite impermeable by water. A heavy rain coming on just as our sinks were completed, and before they were roofed over, filled them to the brim, and as there was no way of emptying them, it was impossible to fill them in with fresh earth every day, as should of course always be done, in order to cover the deposit of the previous day. In our immediate neighborhood was a poudrette factory, which, when the wind was from that quarter, was very offensive; but, judging that no place could be found on the outskirts of a large city entirely free from nuisances, I considered it unadvisable to counsel a removal of the camp from a locality which certainly possessed the advantages of an elevated situation, and exposure to a breeze which came with tolerable directness from the sea. Besides, we were living in daily expectation of marching orders to some point nearer the scene of hostilities. These orders came at the end of the third week, the day after we were mustered into the United States service, for a period of three months. Up to this time, neither the insufficiency of our police arrangements, nor the presence of the above-mentioned nuisance,

appeared to have exercised any deleterious influence on the health of the men. Indeed, beyond a few cases arising from indiscretion in diet and old disabilities, which should have prevented their possessors from ever venturing upon a campaign, we could hardly be said to have a sick list.

Our new post was Harper's Ferry, Va., a spot so famous in the annals of this struggle, and likely to be for so long a time to come a camping-ground for large numbers of our soldiery, that I may be pardoned for describing its geography and topography as far as they have a hygienic significance. It is situated many hundred feet above the level of the sea, at the confluence of two rapid streams running through mountainous districts, and over rocky beds, which have so swift descent that, but for an occasional dam, their entire course would be one continuous rapid. Uniting their forces at this point, they have, by a gigantic effort, cloven the mountain barrier which formerly opposed their farther progress to the sea, and which still, though it permits their egress, materially interferes with the passage of currents of air towards the interior, and exercises a modifying influence on the climate of the valley which it bounds. These streams I need hardly name—they are already classic—the Potomac and the Shenandoah—and the mountain barrier, the Blue Ridge, which, however, passing over into Maryland, loses its distinctive name, sending off spurs in various directions, and finally disappears among the hills of Pennsylvania. The narrow space of level ground along the edge of both rivers was appropriated by Government for its manufactory of arms, arsenal, &c.—affording an amount of water power rarely concentrated in so small a compass. Right up the steep crag behind this narrow ledge clambered and clung the little village, presenting an Italian picturesqueness, and, we may add, upon closer inspection, a filthiness not less Italian. Reaching the top of the hill, the houses stretched along at wider intervals, surrounded by gardens, over a summit called Camp Hill, down a ravine, and thence for half a mile over a second elevation, constituting the village of Bolivar. About half a mile beyond this village is the high ridge known as Bolivar Heights, which extends across from river to river, thus inclosing an isosceles triangle. The heights on the opposite side of the river, called Loudon, in Virginia, and Maryland, across the Potomac, are very precipitous, and clothed with forests to the summit. The soil is hard, containing much slate and some limestone. The difficulty of digging it, and the depth at which water lies, had led to the use, in great measure, of rain-water cisterns, with which nearly all the houses were supplied, while of

wells proper there were comparatively few. The springs were generally scant, and contained a certain impregnation of lime.

Our first encampment here was in a healthy situation, just within Bolivar Heights, forming the advance post of the Division, and our sick list continued small. We were permitted to remain in it, however, but a short time. The departure of Col. Mulligan's Brigade left the intrenchments unmanned, and we were ordered to fall back to take charge of them. Our new ground was one which had been camped on over and over again, and had last been used as a stable by a cavalry regiment. Along the crest of the hill behind the earth-works stood the mansion of the Superintendent of the Armory, and the houses of other Government officials. These, with almost every second house in the two villages, had been deserted by their former occupants, who were employed in the Government works, and whose occupation being gone, had sought work elsewhere—many of them in the Southern army. These deserted houses were at once seized upon by the troops, and had been in the occupancy of one side or the other for a twelve-month. The consequence of this occupation was not only a complete and wanton destruction of everything perishable about them, but a state of most abominable filth, which bore no very flattering testimony to the degree of discipline and police maintained among our volunteer regiments. In fact, the comparative cleanliness of the houses in the place might be rated as follows:

Dwellings occupied by horses—filthy.
" " " contrabands—filthier.
" " " volunteers—filthiest.

This mortifying state of things is due, I am confident, not so much to a disinclination on the part of the privates to obey the laws of decency, but to a failure on the part of superior officers to afford the facilities and enforce the regulations therefor.

A vigorous system of policing was at once set on foot, but it was much embarrassed by the extreme difficulty of obtaining wagons, of which the Quartermaster's department at this post seemed to be almost entirely stripped. And here I must record my protest, in addition to those of others, which have been lately so forcibly and solemnly uttered under the inspiration of the horrors of neglected battle-fields, against the niggardly and inhuman policy which makes the medical department entirely dependent upon the Quartermaster for the transportation of its most essential stores, and the performance of its most imperative duties. One army wagon, at least, not to mention the ambulances, should be under the exclusive control of the surgeon, and

he should direct its use when in camp as well as on the march. The bare, ugly truth is simply this: that the officers of the old *régime*, many of whom occupy the highest places in our administrative military bureaus, think less of the life of a volunteer, than of that of a slave or a horse. They are willing to make appropriations for furnishing ammunition and ordnance; but when it comes to spending money in order to alleviate the sufferings or save the life of the sick and wounded, they become suddenly economical, and hesitate to incur the expense. General Halleck himself has, in so many words, declared himself to be utterly opposed to making all this fuss about the wounded. And it is to be feared that even the Medical Staff themselves of the Regular Army may be somewhat tinctured with this ill-disguised contempt for volunteers; which may lead them to neglect to make proper provision for their wants. Volunteer Regiments arrived at Harper's Ferry while we were still there, a thousand and forty strong, and with dozens of sick, who had not received so much as a hospital blanket or an ounce of medicine of any kind. And this with the enemy only a day's march distant!

Another want experienced was that of lime, which was scarce, and of an inferior quality, the inhabitants of the region having altogether suspended their lime-burning operations.

The co-operation of the medical officers of the General Hospital (located in two of the Government buildings) was sought in policing the entire town, the civil authorities having ceased to be, and the usual sanitary precautions having been therefore entirely neglected. But the unhealthful conditions of our new camp soon began to tell, notwithstanding our best efforts. *Diarrhœa*, assuming in many cases a *dysenteric* type, although not generally of a severe grade, attacked the men by dozens, so that in the course of three weeks, or by the middle of July, more than one-tenth of the regiment were on their backs. The remedy found by far the most satisfactory in the treatment of these cases was sulphate of magnesia, in connection with small doses of opium. The difference between the affection here and that which I had met in Baltimore was strikingly apparent. There it was simply an irritable condition of the intestinal mucous membrane, the result of irritating ingesta, or a sudden suspension of the functions of the skin; and a small dose of opium, in some form, at the first, would frequently control the irritation and relieve the difficulty; but here, it was a congested condition, not of the capillaries of the intestinal tube only, but also of the whole portal system, the result of exposure to baleful atmospheric influences of long continuance.

Hence, opium often but increased the pain, while the depleting purgative, on the contrary, exercised a most happy and soothing effect, unloading the gorged vessels, and relieving the tormina and exhausting tenesmus almost immediately upon the first evacuation. Subsequent evacuations, even profuse, seemed to invigorate not to exhaust. The article furnished by Government seemed to me, as indeed were all the medicines with which I was supplied, of unusual purity. Oleum ricini appeared to act much less kindly in these cases.

As the heat of the latter part of July and of August began to make itself felt, (and owing to our southern exposure, and the obstacle which the mountains opposed to the passage of the wind from the sea-board, it was here excessively intense,) the *liver* began to confess its influence, as attested by the clay-colored deposits which so largely composed the contents of the sinks, by a persistent diarrhœa, or an equally persistent constipation, and in many cases, by a remarkable depression of the vital forces, without febrile action, which resisted all the combined powers of quinine and stimulants. Nothing but a removal to a northern climate sufficed, in some cases, to bring up the tone of the system to anything like a working standard. Hydrargyrum cum cretâ appeared to be the most efficient agent in stimulating the organ, and at the same time checking the diarrhœa, which, to a greater or less extent, usually accompanied this condition.

A little later, passive congestion of the mucous membrane of the *bronchi* showed itself as a consequence of this continued interference with the portal circulation and hepatic elimination, and we had the singular phenomenon presented of an epidemic of *bronchitis sine inflammatione*, during a period of intense heat, while the nights were scarcely less hot and dry than the days. As might have been supposed from its *rationale*, the remedy for this condition was to be found, not in the list of expectorants or bronchial evacuants, but of the mercurials, and cholagogues. Taken in its incipiency, a single dose of blue mass rarely failed to relieve it; but when neglected, it became in some instances very obstinate.

The final manifestation of the hepatic derangement was *jaundice*, following intense cephalalgia and enteralgia—the latter of such severity as to simulate peritonitis.

Apart from the adverse adventitious influences adverted to, the natural advantages of our situation were great. The camp was pitched upon a steep hill-side, some two hundred feet above the rocky bed of the Shenandoah; and the soil being, as before remarked, of a hard, slaty nature, the surface drainage was perfect. In such a locality one

could hardly dream of *malaria;* and yet as soon as, by the middle of August, the nights began to grow damp and chilly, and sunrise saw the mist-wreaths driving up through the gap and curling along the sides of the mountains, this baleful agency began to make its existence but too obvious. It was manifested not by regular attacks of chill and fever, but rather under the masked form of the disease—an unaccountable lassitude and sense of discomfort—a feeling of dullness and vertigo—persistent headache—rarely rigors—not unfrequently fever without the chill—and, in two singular cases, a well-marked *Torticollis Intermittens.*

One single case of typhoid occurred, which terminated favorably.

The use of an unaccustomed water, containing an appreciable amount of lime, undoubtedly aggravated the intestinal fluxes, as well as gave rise to an immense deal of *colic.* Nothing appeared to act so well in this last annoying disorder as capsicum, combined with camphor; opium being in great measure contra-indicated, by the tendency to hepatic congestion. I am satisfied that the value of capsicum as a stimulus is not properly appreciated. Administered in combination with quinine, I found it to increase the activity of the latter materially.

The almost entire absence of fresh vegetables was another cause of intestinal irritation. The people of the neighborhood, under constant apprehension of active hostilities, had not the heart to cultivate their gardens, and the consequence was, that for a long series of weeks the men had nothing but meat and hard biscuit to eat. It would have been a very trifling matter for Government to have sent up a supply of vegetables from Baltimore, which would have been eagerly bought by the soldiers for all they cost. The necessity for variety in the diet table, especially in summer, does not seem to be understood by the authorities. As Professor Ordronaux well observes in his little work on the "Preservation of Health in Armies,"—"Soldiers cannot be fed like steam-engines, by just so many pounds of this or that kind of fuel, daily and unvaryingly administered. A man losing two or three pounds in weight by perspiration to-day, could not be restored to-night by simply gorging him with a like weight of beef, pork, or bread. In the presence of vital forces, the conduct of organic functions cannot be regulated by chemical formulæ born of the laboratory. No narrow methodism is tolerable here. We must follow experience alone; and experience everywhere shows that, in the healthy, health is best preserved by a *liberal, mixed diet.* If we would preserve the health of our troops, we must amplify the range of their dietary. It may cost a little more, and but a little more, yet that little is a hundred per cent. less than the cost of nursing a

sick man, paying him wages besides, and over all losing the benefit of his presence on the battle-field." Of the quality of the rations furnished, certainly no complaint could be made. Everything was good and in good order. The want referred to was in some measure met by the large supplies of blackberries brought in by the country-women, of which the men were encouraged to eat freely.

The *remittent fever* which prevailed to a slight extent was of a mild form, rarely lasting longer than a week, but often leaving the patient prostrated for a much greater length of time. Heroic doses of the mild chloride and quinine were the most effective treatment.

Vitiated secretions and an impoverishment of the blood were still farther indicated by *ulcerative stomatitis* and *furuncular eruptions*. The superficial abscesses about the ends of the fingers and nails, which presented themselves in considerable numbers earlier in the campaign, I was disposed to regard as rather the result of local violence to hands unaccustomed to hard labor. The great prevalence of *urticaria* during the earlier part of August was probably due to the wearing of heavy flannel underclothing during the intense heats which then prevailed.

Within a quarter of a mile of our own ground was encamped another New York Militia Regiment. It was therefore subjected to precisely the same climacteric influences as ourselves. Yet its sick list, while it presented the same variations with ours, was never as large by one-fourth. It may not be unprofitable to notice the differing conditions which produced the unfavorable preponderance on our side. It may fairly be attributed—

First, To the classes of men composing the two regiments; the Twelfth being composed of the ordinary material of volunteer regiments, while the Twenty-second was formed of merchants, professional men, students, and clerks, a class wholly unused to the labor and privation which they here encountered. The deduction is a patent one:—that regiments, composed like the latter, while invaluable for sudden emergencies, from the high degree of discipline and drill which they constantly maintain, and the promptitude with which they are able to obey a call, are only wasted when called upon to undergo the fatigue and exposure of a long campaign.

Second, To the fact that the Twelfth occupied Sibley tents, while our own men were supplied almost entirely with wedge tents. The former could with the greatest ease be furled daily, and thus the most perfect ventilation of the tent and drying of the ground secured, while the latter must be entirely struck in order to secure this result;

and this could not be accomplished oftener than twice a week; not always as often. In my opinion, no wedge tent should be made without a square window in the back, near the ridge-pole, and a flap to act as an awning in case of rain, but so arranged that it cannot possibly close the opening. The deficient ventilation of tents is a monstrous evil, demanding immediate and careful attention. Nor can it be considered allowable, in a sanitary point of view, to place six men in one of these common tents, as is now the regulation. The atmosphere of a tent thus occupied becomes by morning perfectly stifling and pestilential. Typhoid is its natural child.

Third, To the saturation of the soil on which we were encamped with the emanations, excretions, and offal of regiments which had preceded us. No regiment should be compelled to pitch its tents upon the precise site of a former, unless for unavoidable strategic reasons; and when this becomes necessary, the first care of the commandant of the post should be to see that every facility is afforded for a thorough police; while all houses in the vicinity should be kept most scrupulously clean, frequent inspections being made to assure it.

There is good reason for supposing that the body-belt now worn by many of the militia and Zouave regiments, in contradistinction to the old cross-belt, exercises a very injurious tendency. The weight of from forty to eighty rounds of ammunition, in addition to a heavy side-arm, supported entirely upon the hips, is, we are confident, most pernicious. As our regiment made no long marches, I could trace no cases of hernia to this agency; but there was a constant complaint of pain and weakness in the back and loins, with evidence, in some cases, of renal congestion, and of pain and tenderness in the bowels. In not a few instances I was obliged to keep men on the sick list who were otherwise fit for duty, simply to avoid an amount of pressure upon intestines already irritated and enfeebled, which I feared might provoke serious inflammation.

But one death occurred during the entire term of service—that of our Colonel, James Monroe; a man of great military capacity, remarkable versatility of genius, scholarly attainment, and courteous demeanor, and possessed in an unusual degree of the power of commanding the confidence and affection of those about him.

His case was so obscure and unusual as to merit especial notice. While the Regiment was still in Baltimore, he was seized with symptoms new and alarming to me, which Dr. Mackenzie, an experienced practitioner of that city, denominated a congestive chill. This left him much prostrated. Fearful of a recurrence on

exposure to the sun's rays while in this enfeebled condition, he remained in Baltimore for a period of fifteen days after the departure of the Regiment for Harper's Ferry. Anxiety for the welfare of his command led him to follow it while still much debilitated. For the first fortnight he did not seem to lose in strength, although his nervous system was in a most irritable and unsatisfactory condition. At the end of this time he was attacked with mild febrile symptoms, which gradually abated under the free use of quinine, until the afternoon of July 29th, when, after a natural though somewhat profuse evacuation, he was seized with the most excruciating pain in the hypogastric and anal regions; so severe, indeed, as to cause a brief syncope.

Opium was administered in full doses, both by the mouth and the rectum, with the effect of moderating the pain, but without reducing the frequency of the pulse, which was weak and thready, numbering about 120. During the next day his condition was not materially altered. Ten grains of the mild chloride, followed later in the day by sulphate of magnesia, with capsicum, failed to move the bowels. The pain was severe at intervals, accompanied with some tenderness on pressure. There was nothing as yet, however, to make his physicians suspect anything more serious than a severe bilious colic. Towards midnight of the 30th the pains in the inferior abdominal region ceased entirely; vomiting of bilious matter supervened, with hiccough and eructation. The pulse rose in frequency and lost in force. The skin became cold, and bathed in clammy perspiration. The whole condition, in short, indicated a fatal collapse. Carbonate of ammonia and whiskey, administered in very large doses, both by the mouth and by enema, artificial heat and stimulating frictions, failed to arouse the faintest reaction. The jactitation, which from the first had been a prominent symptom, became more and more distressing, the pulse faded away, the brilliant mind at last lost its vigor, and he finally succumbed at 6 A. M. of July 31st.

The short duration of the attack—only thirty-six hours—the agonizing nature of the pain, the great prostration, the intense nervous anxiety, the anxious and despondent expression of the face, the peculiar tone of the cries uttered, (being more like those of a wild animal than articulate sounds,) and the suddenness both of onset and of deliquium,—all appeared to the surgeons who watched the case to point to a lesion of the peritoneum—and that lesion probably perforation of the intestine. As an autopsy could not be had, however, the diagnosis must remain conjectural.

Thus perished, on the soil that gave him birth, not the least noble of the many heroic men whose lives have been offered up on the altar of patriotic devotion, victims to the hellish demon of Rebellion.

Urine Injections—A New Remedy. By C. A. HARTMANN, M.D., Cleveland, Ohio.

In the course of his "Lectures on New Remedies and their Therapeutical Application," published in the *American Medical Times*, Prof. S. R. Percy, of New York, gives two cases of stone in the bladder, in both of which he injected his own urine three times daily into the bladder of the patient, continuing the practice, in one instance, for seven, and in the other for nine weeks, and, as he declares, with the most happy result, for the doctor's urine dissolved the patient's calculus, and a complete cure in either case was the consequence. The professor feels, evidently, rather proud of his discovery, and pronounces his urine emphatically a new remedy. That is, however, a mistake. New is only the taking of the doctor's own urine, and the caution to those inclined to follow this dirty practice to keep their water clean of alcohol and tobacco! In the last century, Dr. Sachs von Loewenheim testifies that it was a particular secret of Dr. Pansa to break up urinary calculi by means of crabs' eyes dissolved in "spiritus urinæ," (a preparation from human urine,) which solution he injected into the bladder with the aid of a peculiar instrument. Instead of merely improving upon such an antiquated and deservedly forgotten practice, it is certainly more congenial to the progress of the times to examine carefully what the really efficient ingredient or constituent was in those old compounds, and human as well as animal matters in vogue with our forefathers. Many of these disgusting things had their value, although the virtues of a great number were only imaginary. It looks as if some of them had been too hastily discarded, and since pepsine, urea, and similar preparations have been admitted into the materia medica, being only new forms of old remedies of the class referred to; since even the celebrated "Album Græcum" has had its resurrection in Churchill's hypophosphites, we are at a loss to find fault with Percy's proceeding, considered as an experiment. To recommend its introduction into general practice is more than ridiculous, it is an absurdity. Admitting that the statement, as published, be true, that healthy urine, injected into a bladder containing a calculus, possesses the power of dissolving the concretion and remove the disease, under certain

conditions, then we have only to find by chemical analysis and further experiment, what element of healthy urine possesses that valuable power, and it will naturally follow that we employ that element, in such a manner as its character will dictate, instead of the changeable and too readily polluted refuse fluid from our body. In order to facilitate the researches in that direction, the recommendations of older writers may find here a place, for their manifold methods of employing animal urine against calculous affections may furnish some useful hints as to what direction it might be best to follow for the discovery of a really new and useful remedy.

The urine of many animals, but especially that of men, oxen, and he-goats, was in great repute among the old physicians as a remedy for the stone. Dr. Crato von Krafftheim, physician to one of the German emperors, wrote as follows: "The water distilled from human or bovine urine, if not distasteful to the patient, is a good but mild diuretic for calculous troubles." Claudius, Deodatus, and Weickard corroborated this. Petrus Johannes Faber pronounced the tincture of human urine a sublime secret for the cure of stone. He distilled the urine over a very slow fire, poured upon the residuum rectified spirit of urine, and obtained a tincture which had to be rectified repeatedly to destroy its disagreeable odor. It was taken in scruple doses, mixed with an appropriate water. The same author stated that the urine found in the bladder of a newly-born he-goat or calf, drunk immediately, was the very best remedy for the purpose of destroying stones in all parts of the body. Rudolfus Gocklenius, professor at Marburg, took the concretion accumulating on the bottom and sides of night-utensils, dried and powdered it, then mixed it with brandy, and allowed it to settle in a warm place. Of this mixture he gave a spoonful morning and night. Schroeder extolled the volatile spirit and the volatile salt of human urine as excellent lithontriptics. Three or four grains of the salt were taken with parsley-water or chicken broth. Rolfinck mentioned the same spirit on account of its aperient and diuretic power, taught the best method of preparation, and added, it might be taken in beef-soup, prepared with parsley or parsnip, or in French or Rhenish wine. A man by the name of Conrad Hoster, finding he could not pass his urine, took three spoonfuls of his boy's urine in a glass of Rhenish wine, and soon experienced relief. Arnold Wendel took for diabetes seven or eight drops of the spiritus urinæ, mixed with beef-broth. Untzer was told by an experienced chemist that either the rectified spirit of urine, or the volatile salt, or the magisterium of the same, or the oleum luti, given in some aromatic

water, would give speedy relief in renal calculi, provided the patient could bear the nasty smell, for they would not only keep in order the passage of the urine, but expel also gravel and stones. Dr. Wedel thought much of the urine spirit. The essence of human urine was believed to destroy calculi in the kidneys as well as in the bladder. Dr. Salamo Albert recommended two lavements made with urine. The one, at the same time, expelling the water from the abdomen, was prepared in this manner: boil an ounce and a half of good sour dough, with a little salt and water, enough to make the whole eight ounces; filter, and add of urine of a pure boy, four ounces; clarified honey, one ounce; oil of rue, three ounces; mix. The other clyster served to keep the bowels open, and to regulate the urine. A handful of toad-flax was boiled in a pound of beef-broth, an ounce and a half of boy's urine, half an ounce of the oil of rue, and two drachms of the electuar. hier. nicol. added, and the whole mass mixed together. For an external application, spirit of urine was mixed with oil of urine, and some aromatic oil to conceal the smell, and used warm as an embrocation. And, remarks another old author, all remedies prepared from urine exhibit their diuretic and lithontriptic effects by the virtue of the volatile salt they frequently contain.

Burckard Waldbuerger, as soon as he felt trouble in his kidneys, drank his own urine, or that of a she-ass. Judit Loewffeltantzin took, also, for the same trouble, her own urine, adding to each mouthful ten drops of the distilled oil of chamomile. Barbara Guentherin, having no he-goat, used her she-goat's urine. The salt of the stag's urine, taken in scruple doses, was not less esteemed as a good diuretic. A sow's urine was thought particularly efficient. Schott pronounced the wild boar's urine still more powerful, and sometimes ordered this animal's bladder to be eaten, particularly smoked. Of bovine urine, Helmont narrates that a girl had frequently passed blood instead of urine. He therefore ordered the bladder of a newly-born male calf, and of the fluid contained therein, (resembling urine to some degree, but not entirely like it;) the girl had to take two ounces every morning, mixed with some white wine. She was soon fresh and healthy again, and remained free from calculi. A trial of the same kind with the bladder of a newly-born he-goat turned out still more favorably. The same statement about the fluid in the bladder of a bull has been repeated by Grembs, and Schroeder has maintained that a he-goat's urine, drank immediately after being passed by the animal, was the most praiseworthy of all urines, on account of its great power to expel the stone and increase the urine.

Against vesical calculi, a water distilled from human excrements had also its admirers. The famous all-flower water, prepared from cow-dung, was prescribed for the cure of renal calculi. So was the dung of nearly all the ruminating animals; of mice, pigeons, chickens, geese, swallows, etc. It would be too tedious to give all the particulars about these singular medicines. What has been stated may suffice to give an idea of the extensive exhibition of urine and its preparations in calculous diseases, practiced up to the last century. For the sake of humanity do we hope that the age which can permit such medication has passed forever.

Yálpánaranavaithiyam; or, Jaffna Native Surgery. By Dr. GEO. M. REID.

[For the following Gleanings of Tamil Surgery* I am indebted to Dr. J. W. RICHARDS. Dr. SAMUEL F. GREEN, of this city, a missionary of the "American Board of Commissioners for Foreign Missions," kindly brought the manuscript with him when on a visit here, some years ago, to some extent revised it, and placed it in the hands of Dr. Richards for publication. I have endeavored to reproduce the original, and added explanatory notes as far as it was in my power. All my endeavors to find some one conversant with the language and the subject were unavailing, and in one or two instances a hiatus occurs from my inability to decipher the original. I should have presented as a matter of interest the Jaffna words, also in Jaffna characters, (with which the manuscript before me is richly illustrated,) were it possible to obtain the requisite type. ELSBERG.]

How to drive off the Devil, called Sangáviyam.—Sangáviyam causes the insensibility after falling from a height. He pushes the sufferer off trees, and also into wells and the like. It is the custom after such occurrences have taken place to call to the sufferer's aid one skilled in the art, to expel Sangáviyam by the use of *mandras* or charms, and the margoza tuft,† and to make an offering to the nearest Temple. A devil sent by a wizard may also cause one to fall. Whatever devil may have been the cause, the senselessness must be treated by a Mandra-man—who must be a Sivite priest, of advanced age, and with good teeth.

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* The Tamil language is spoken at the southern extremity of India, and on the Island of Jaffna, immediately off the coast.—[ED.]

† Margoza leaves grow in tufts, and are extensively used in superstitious ceremonies. In cholera times, they are worn in the clothes, hung over the door, &c., to keep off the cholera devil.

Boils—Abscess.—As soon as a boil appears, it should in the morning watch be wetted with spittle and rubbed. If in spite of this the boil increases, mango leaves should be heated, mixed with margoza oil and rubbed on. This is called *santhappánam.* Should this fail, apply the milky juice of the oleander. Should pus gather, boil *kuruvicchai** flowers in water, and bind them on, or apply a poultice of curds and rice well mixed. After the boil has opened, apply *karanaipávattai* or tobacco leaves. If very painful, soothe it by *mandras,* (charms.)

Sores—Ulcers.—To these apply an ointment of cocoanut oil and beeswax mixed—if this succeed well—otherwise add to it resin, blue stone, white vitriol, &c. For fistulous sores, *nacchu*† oil is an approved remedy. For mere scratches of the skin, smear on cocoanut oil.

Sprain.—When a sprain happens, rub the part immediately with sesamum oil, and have it stroked by the foot of one footling born. Should this fail, apply turmeric‡ oil, and call the charmer to use mandras. The mandra for this is, *Om tér urulatthirumudi urulatthirucchadai urula ammi urula A kásamurula aiyanár sír pátha murula urundu pirandu O di vara vé sivá ká.* Write this mandra, and tie it on the strained member, and hope for a cure.

Local Pain.—Try for some time the effect of drinking arrack, smearing the part with oil, and sprinkling upon it turmeric powder. Should this fail, make rice mush, mingling in some cocoanut oil. Take ripe cocoanut meat grated, spread it on a cloth—upon this spread the mush hot, and apply at once to the part. After this is cold, let the patient eat the mush. After this, heat cocoanut, squeeze out and drink its juice mixed with sesamum oil. If this fail, apply a plaster.§

To raise a Blister.—Grind the root of the plumbago zeylanica, and apply it to the affected part; also the milky juice of the euphorbium, or the leaf of the castor plant wilted and tied on, or the milky juice of the *tillai,* soaked in a cloth and applied to the part; any one of these will blister. After the blister has risen, rub cocoanut oil on the part.

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* A parasitic creeper, the leaves and flowers of which are mucilaginous.

† Nacchu oil means literally poison oil; it is made by simmering several mineral and vegetable astringents together with spices in sesamum oil.

‡ An oil made by simmering divers roots and drugs in one part each of sesamum, castor, and cocoanut oil, and three parts of turmeric juice.

§ Called a *Pattu,* made frequently by mixing in with quicklime, honey, eggs, &c., and spreading the paste on a cloth.

Wounds.—If there be much bleeding, stop it by placing on the wound fresh leaves or *olais*, and saying: *Om Indra tangai mandra kanni iruppukkurang kundu tannírkkup pó rál tannir venniráka nitkavé siváká;* afterwards tie on the *otheyam* bark (bark of the odina pinnata), frequently wetting it with water. To slight wounds, red pepper may be applied. If the wound becomes painful, heat powdered ginger, black pepper, and turmeric, and bind on. For gaping wounds, stitch with cocoanut husk fibre.

Fractures.—A fracture may be detected on crepitation, and the fractured ends may be felt by the touch. If the arm bone be broken, stroke and pull it straight; apply four splints of proper length; then let sesamum oil continually drip upon the part. If a leg bone be broken, lay the person on the back, stretch and straighten the limb, and keep it in place by tieing it on to pegs driven in the ground on each side of the limb; then tie on splints, and let drip upon the part sesamum oil. A diet of rice mixed with sesamum oil will cause the fracture speedily to unite. After the bone is united, cast away the splints and apply a casing made up of eggs, honey, euphorbium milk, *chunam*, &c. If a large callus appear at the point of union, use pressure upon it by splints. When a vertebra or rib is broken, it is to be cured by applying only the casing of chunam plaster. If the skull be fractured, leave it to heal spontaneously, only feeding the patient generously. In fractures of fingers or toes, apply slender splints or the chunam casing. After a casing is removed, cure the lameness by turmeric oil. If there be a wound with the fracture, stitch it, and apply splints to the fracture.

Dislocations.—A dislocation may be recognized by comparing the sound with the injured limb and by the change in motion. If the shoulder-joint be thrown out, bring the bone right, and apply a "casing," [starch-bandage-like.] Also the same for the elbow. If the wrist be put out, make the patient stand on a mortar, grasping hold of a bar above; then knock the mortar from under him. Dislocation of the wrist may also be reduced by walking about with a heavy stone tied to the hand by a rope. In dislocation of the hip, relax the part for two or three days by the application of sesamum oil; then work the bone into place; after which, put on a casing. If, after the casing has fallen off, there be lameness, apply some medicated oil. Dislocation of the knee is to be immediately reduced by traction and a "casing" applied at once.

Slivers, Bones, &c.—Slivers, &c., should be at once removed; then a lump of salt should be tied on the wounded part and heated by a

fire-brand. If pus gather, remove the foreign substance, and to the wound apply euphorbia juice. This is proved good by experience.

Snake Bites.—Immediately after a snake has bitten one, paint a circle of chunam around the wound, and slap the part by a tuft of margoza leaves, in order to prevent the poison spreading in the system. Keep the patient from falling asleep. Apply to the wound the *Geruda* stone, which, if the wound be really a poison bite, will not immediately fall off. When, after having absorbed the poison, the stone falls off, it is put into cow's milk, and in this it will throw out all the poison. If this does not cure, then give some rhinoceros horn rubbed on a stone wetted with breast milk. This remedy is very extensively used, and in a great variety of ailments.

Dog Bites.—Immediately after a dog has bitten one, the bite should be slapped by an old shoe; afterwards burn shoe leather and tie it upon the wound; together with this, mandras should be used. If this does not cure the bite, apply muruñgai * leaves, ginger, and black pepper ground together; otherwise the patient may be carried to the Mandra-man, who asks him in how many days the bite will heal; hearing his answer, he makes a cut in the muruñgai tree, which cut, and the bite, will heal up together, according to the patient's expressed date.

Syphilis.—For this or for pox-sore give mercury powder to salivate, and then draw out the humors. Also locally, dolichos gladiatus oil, &c. By the use of China-root powder, internally, even though the patient be not salivated, some cases of syphilis are cured. During salivation, let the patient abide in a closet, eat milk, &c., eating no salt nor tamarind, nor chillies;† observe a strict diet. If the patient "break his diet," the disease [remedy ?] will appear in the hands and feet.

Bubo—Fistula.—The swelling which arises by contagion is called bubo. Heat a brick and rub it on the swelling, pronouncing mandras. Wilt a plantain leaf and tie upon it. Should worms breed in the swelling, treat this the same as any other wormy sore. If the bubo become fistulous, apply Nacchennai.

If a fistula appears in the cheek, it is called "cheek piercer;" if near the anus, "side *Pavantharam.*" To these we should apply either the caustic tent or the Nacchennai.

Burns.—Apply immediately either honey, or salt water, or rain

* The Hyperanthera Moringa. † Red peppers.

‡ Nacchu oil, or Nacchennai, is the "poison" oil before spoken of. See note, p. 255.

water. If a raw sore, apply either fine dust or Margoza powder. If this does not cure, then apply by a feather cocoanut oil, in which horse-dung has been boiled.

Burn by Gunpowder.—Boil peacock feathers and peacock fat in cocoanut oil, and apply this oil; if not cured by this, treat as a common burn.

Tooth Worm.—Pluck a vattukkai, grind it in Margoza oil, ball it, and place it on a heated iron grass-cutter, and cover with half a cocoanut shell, having a hole at its apex. Suck in the smoke which rises up through this hole, and spit in water, and the worm will be seen to float. This is quite a proved remedy. If a babe bite a brinjal, its teeth will decay.

Gum Boil.—Heat a Kilavai stick in the ashes, and touch the boil morning and evening by it. For toothache, boil ebony saw-dust, and gargle with the water.

Elongated Uvula.—Elongation of the uvula will produce cough and tickling in the throat. As soon as discovered, go, without speaking, and pluck bryonia leaves, and squeeze the juice upon the crown of the head. If this does not succeed, pull the three hairs exactly in the middle of the crown; if this fail, take araippu, (the pumice of Iluppai seeds,) alum, black pepper, salt, turmeric powder, and mix them, place them upon the leaf-stalk of the plantain or veruku plant, and press them upwards on the uvula. A severe case will resist even this; if so, touch the uvula by a heated gold wire, or by a hot turmeric root. Apply on the proper nerve in the ear the kodi véli,* to make a sore, and draw off the humor from the uvula. Sometimes it is advantageous to boil *kurukkan vittu;*† dry it, and swallow the lumps dry.

Fish Bone.—If one is choked by a fish bone, reverse the ends of a brand lying on the hearth. Strain down a morsel of boiled rice, and push the bone along. Stroke the neck with the beak of the spoonbill, saying this mandra: *Umai yé padukira pát taip páráy námung kandóm mullu viluntháthu kokupparanthathu kalli mullé kánchuramullé vellimullé pámpusuttiya palli vayira mullum muri muri yisupariyammai yánai.*

Sore Eyes.—Symptoms of sore eyes are enlarged blood-vessels in the conjunctiva—shrinking from light, burning, &c. In such a case, go silently and pluck Kovvai ‡ leaves or Mosumosukkai § leaves, and squeeze the juice into the eye. Powdered rock candy and alum, mixed, and blown into the eye through a quill, is also recommended

* The plumbago zeylanica, most likely the root already spoken of for raising a blister.

† A small cereal. ‡ Bryonia. § Bryonia scabra

for red streak in the eye, (gorged conjunctival vessel.) In excessive redness of the eye, add fresh butter to hot boiled rice; put some of this in the eye, and apply the rest externally to the eye. Immediately when the attack of sore eye comes on, catch urine, and wash the eye therewith. This is a proved remedy. When there is chronic disease of the lids, (*"Pulumécchal,"*) burn alum on a heated iron, add lime-juice and pulverize well with a Kadukkáy.* For opacity of the cornea or spot in the eye, employ the alum pill (alum matthirai) or the pithurókini matthirai. Píthurókmatthirai, or the píthurókini pill, is made as follows: Take Inthupper (nitrate of soda) Piper-longum and Píthurókini (yellow [?] hellebore,) of each, equal parts; grind them together in the juice of Nanthiyávattai,† and make into pills.

For Cataract in Eye.—Apply the *Naiyanavithiyennai,*‡ and bathe daily. It is best to introduce a needle and disperse the opacity. If, consequent on this, the eye inflame, cauterize over the brow by a hot iron. If agony be experienced in the eye, open the frontal vein and bleed freely.

Scrotal Swelling, (called Andaváyu.)—If this swelling retract the testis within the belly, the disease called *Kalilèruváthan* will develop. The symptoms of Andaváyu are swelling, acute pains, tenderness, soreness of body, dragging pain of testis. The treatment for this is, wrapping the part in a wet cloth and heating it by the handle of a ladle. Boluses of the size of an aruka-nut, made of nutmeg, *tumpailai*, and garlic ground together, may be taken internally. This will cure the disease; also select the spot on the lobe of the ear where the proper nerve passes, and punch a hole there.

Múlam.§—Múlam is of three kinds, viz.: Internal, external, and protuberant. In prolapse of anus, apply to the part the pulpy surface of an aloe-leaf, softened and split, and the prolapse will disappear. In internal piles, there will be discharges from the bowels; for this eat a mush of dalbergia shoots and rice flour, mixed, dipped in sesamum oil at the time of eating. Be careful with your diet; mix with it flowers of the hyperanthera moringa, fry and eat.

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* Terminalia chebula, an astringent nut. † Nerium Coronarium.

‡ Naiyanavithiyennai means literally eye-rule-oil; it is a medicated oil which is rubbed upon the head, allowed to remain for a while, and then removed by a peculiar process of bathing.

§ Múlam means anus; it means also, root, origin, and seems the exact equivalent of the word fundament. In this connection it doubtless refers to piles, etc.

E.

Múlakkiranthi is a sort of whitish spotting over the surface of the body. For this, eat roasted blood of the turtle; or if this fail, eat hog's lard.

External múlam may be scattered by applying the following mixture: R.—*Iluppai* seed pumice, *cumin*, black *cumin*, white garlic, blue vitriol, and cardamom; grind all these together abundantly. This will cause the swelling to "dissolve" and fall. To cause the swelling to disappear, powder black sesamum seed, mix it with sesamum oil, and add a little "*Jaggery*." Heat a brick well in the fire, and put it into a mortar; then put on this the above mixture, and let the patient sit over the fumes, kept in by cloth wrapped round. The múlam [piles?] will disappear, [literally translated, "be severed and fall."] To remove piles, operate.*

Súlai.—Súlai is of eighteen different kinds—viz.: *Mékasúlai, Surasúlai, Vedisúlai, Bellysúlai, Headsúlai, Nithampasúlai, Tonthasúlai, Kannasúlai, Mouthsúlai, Sidesúlai, Kneesúlai, Kundusúlai, Mutsúlai, Handsúlai, Nírsúlai, Necksúlai, Urasúlai, Sarvángasúlai.* For all these, a valuable remedy is the following: Take China-root, 5 palams;† kurásáni, Athividaiyam, [a root,] O'mam, Sáthipatthiri, nutmeg, cloves, dry ginger, long pepper, black pepper, of each ¼ palam. Powder separately, sift, put in a pot, and add a quart each of cow's milk and "*ghí*;" boil at a moderate heat for a Nálikai,‡ constantly stirring it to keep it from burning to the bottom. When it becomes thick, sprinkle in 6 palams of sugar; then stirring well, put all in a new vessel. After three days, begin to take of this medicine as much as the bulk of a Tánrikkáy,§ with a Kalanchu‖ of sugar, for a term of forty days.

Onychia.—This is a swelling about the nail, accompanied by great pain. It may arise from the piercing of a splinter or thorn, or may appear spontaneously. For this take Kumilam, (stew it moderately,) and cover the swelling with it. Or take the flesh of a shrimp and bind on. If by these means uncured, then take an aloe-leaf, heat it, take out its pulp and bind on.

Incurable Diseases.—The following diseases are incurable: Check-piercer, (a cancerous ulcer;) Tonguearanai; Toothsúlai; Nervesúlai; Back carbuncle; Diabetes; Scrotal enlargements; Mouthputthu;

* There is here in the manuscript before me a hiatus, which I cannot fill.

† A *palam* is about 1¼ ozs. avoirdupois.

‡ A *nálikai* is 24 minutes.

§ Tánrikkáy is Terminolia Belirica fruit.

‖ A Kalanchu is as much as $\frac{1}{6}$ of an ounce.

Kandamalai, [literally: Necklace, probably inveterate cutaneous disease encircling the neck;] Throat*karappan; Mukasingi,* [literally: Face-lioness; perhaps Lupus;] *Padarthámarai,* [literally, spreading Lotus;] Vagina*súlai; Molukupanaiyam;* Allupanaiyan.

Diseases caused by witchcraft are also incurable. Furthermore, according to some, the following, viz.: Ulcer; *Vedisúlai; Mandaisúlai;* Poisonous humors; Leanness; Habitual heat; Stoppage of nose; Diseased teeth; *Sathaiyadaippu;* Ulcerated ear, and Seminal weakness, are incurable.

Bodily Parts.—These are head, face, eye, nose, mouth, ear, neck, chest, hand, shoulder-joint, back, belly, loins, buttock, thigh, leg, male organ, female organ, fingers, toes, &c. The bones in a man number 4,448; and the diseases number as many as there are bones. The head is divided into vertex, occiput, forehead, ocular region, and temple. The face, into eye, nose, upper jaw, lower jaw, *mukarai,* [*i. e.*, glabella or interocular space,] chin, and ear. The prominence in the front of the neck is called "the Knot." [It is supposed that certain nerves are here knotted together.]

The Viscera.—A tube leading from the mouth joins it with the stomach. There are the organs, "mango," "Lotus fruit," [literally so called,] great liver, small liver, stomach, fæcal sac, and urinal sac. The "fundament-fire," rising up from the anus, digests the food that enters the stomach. If this fire either be in excess, or be deficient, disease will result.

FORMULÆ.

Naiyam—(Sternutatory.)—Take garlic, black pepper, and Asclepias juice. Mix them together. Then mingle with Noche juice, [*i. e.*, the juice of the Vitex Negundo leaves,] dry and powder. Blow some of this powder through an o'lai scroll-tube into the nostril.

Another Form.—Take dry ginger, white garlic, black pepper, black cumin, and mustard; roast and powder these, then grind the whole with Asclepias-milk. Then dry, and after again powdering, blow into the nostril.

Another Form.—Take dry ginger, Tippili, [*i. e.*, long pepper,] black pepper, cinnamon. Also take Káttotti, Perumarunthu, Nocchi, Kánrai. Dry these four roots well, powder and mix them with the above-named four spices, well pulverized. This compound to be blown up the nostril.

Turmeric Oil.—Ilavangam, (*i. e.*, cloves,) Samuthiráppacchai, (*i. e.*, Mentha Zeylanica,) Katkam,* Kathadakasingi, and Kárilay-

* A compound of many drugs.

root, (*i. e.*, root of Galega, Maximá,) Killapathiri-root, sesamum oil, castor oil, cocoanut oil, are boiled together to a wax consistence. To each quart of oil add a quart of turmeric juice.

Nacchennai—(literally, *Poison Oil.*)—Take white vitriol, blue vitriol, Areckanut, white frankincense, Vempd'dal, Kaippu, dry ginger, dry garlic, black pepper, flag-root, onion, leaves of Aristolœhia Ind. Powder all these, boil in sesamum oil, strain and use.

Vasaiyennai—[*Supple Oil*]—[*To Cure Rigidity of Joints, &c.*]—Take juice of fresh turmeric, juice of bryony stem, juice of Piráli leaves, and young cocoanut water, of each one quart; of castor oil, three-fourths quart; sesamum oil, one-fourth quart; cinnamon bark, one palam; Velutthal gum, palam ¼; Kárpuká grains,* palam ¼; Fenngreek, palam ¼; O'mam, palam ¼. Mix all, and put in a vessel to soak for three days; then strain and keep for use.

Consultations—[*Two or more Physicians in one Case.*]—In case of fracture or dislocation of bone, of abscess, ulcer, wound, or such like, should fever or headache arise, while the surgeon should attend to the injury, a physician skilled in such symptoms should be called in for the treatment of the fever, &c. Moreover, should great pain, twinging, burning, &c., appear, the mandra-man should be called also.

The Anatomy of the Lens, and the Pathological Anatomy of Cataracts. From the "*General Pathological Anatomy of Cataracts.*" By M. CH. ROBIN. (Translated for the AMERICAN MEDICAL MONTHLY.)

The Anatomy of the Lens.—The crystalline apparatus is composed:

1st. Of the capsule or crystalloid of the seventeenth and eighteenth centuries, which is divided into two parts: the *anterior crystalloid* and the *posterior crystalloid.*

The latter projects into the vitreous humor; the former is bathed in the aqueous.

2d. Of the *layer* of *epithelium* of the *capsule* of the *lens* which is placed upon the internal or crystalline face of the anterior half only of the capsule. Pappenheim, Bruecke, Stellwag and others, have erred in supposing it to be placed on its anterior or iridial aspect. The cells have all the anatomical characters and all the modes of transformation of epithelial cells.

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* *Kárpuká arisi;* query: is this the same as *Kárppo'karisi*—Psoralea corylifolia?

3d. Immediately below the single row of epithelial cells, and in contact with it, are found the *cells of the lens*, which conduct imperceptibly to the *tubes of the lens*.

The latter are the direct result of the elongation and coalescence, end to end, of the cells themselves; and it is for this reason that these two elements have been mentioned in the same paragraph.

These cells and tubes form the superficial, soft, pultaceous, transparent layer which surrounds the lens, and constitutes the external fourth of its anterior half, and about the eighth to the sixth of its posterior half. It has been compared, in consistence, to a thick solution of gum.

4th. The centre or *nucleus* of the lens, below the soft layer, is composed of the *serrated fibres* or *proper fibres* of the lens.

The soft layer above, or rather the cells and tubes which compose it, dip down somewhat into the nucleus of the organ, in the following manner:

(*a.*) On the *anterior face*, following the direction of three lines or rectilinear planes, which radiate, like meridians, from the centre of each face to its circumference, diverging at an angle of 120°, one descends, the two others ascend obliquely.

(*b.*) On the *posterior face*, also, the cells dip down somewhat into the substance of the nucleus, following the direction of three radiating meridians, towards the circumference, but in a direction precisely the reverse of that taken by the lines of the anterior face; so that the radii of one face correspond to the inter-radial spaces of the other; but it must be remarked, that on the posterior face the superior radius bifurcates, very near the centre; at times, the two descending radii also bifurcate, but only near the circumference.

The increased thickness of the layer of *cells* and *tubes* of the *lens*, on the level of these lines or meridians, causes the meridians to present to the eye of the observer, in their normal state, the appearance of so many little clear radiating spaces. They are to be sought for especially in the eyes of infants.

But in certain morbid states, in which the cells offer a peculiar alteration, of which the nature will soon be remarked, and which renders them opaline and less transparent, these clear spaces become whitish, and more or less opaque. Such is the anatomical cause and characteristic alteration of the *cataract of three branches*, which is the simplest, and perhaps, too, the rarest of all.

We shall see in reality that the knowledge of the normal state

which we have just been recalling will clear up, in a very satisfactory manner, the pathological anatomy of other cataracts.

The *cells* and the *tubes of the lens*, endowed with an extreme delicacy of structure and proneness to alteration, hold in point of fact the first rank in the alterations which we are about to describe.*

A RÉSUMÉ OF THE PATHOLOGICAL ANATOMY OF CATARACTS.

First Class—Lenticular Cataracts. First Species—Soft Cataracts.—Alteration seated in the soft, superficial, cortical layer of the lens. This alteration causes either several whitish or grayish opacities un-

* The note which we place here, rather historical and anatomical than relative to pathological anatomy, is necessary to the proper understanding of the latter, and especially to connect the following descriptions to those which already exist in science.

The cells of the lens were seen first in man by Huschke, who called them *globuli lentis*, (1833;) then in the embryo by Valentin, (1835,) who observed fibres provided with future nuclei. They were likewise seen by Schwann, (1838,)who, as also Werbeck, (1834,) noticed that some are provided with a nucleus, and others not. Henle described these cells exactly, but their nuclei less well, (1841.) Bischoff saw both the large cells with and without nuclei, and he noticed, (1842,) under the name of nucleated *fibres*, the tubes of the lens, (as proceeding from those cells only which are provided with a nucleus;) tubes or nucleated fibres, which, losing their nuclei and becoming flattened in the course of the phases of their evolution, become the *fibres* or *serrated bands* of the lens.

Since Bruecke showed that these cells are distinct from the epithelium of the capsules, (of which alone he incorrectly indicates the real seat;) that they compose what we call the *humor of Morgagni;* and that they constitute the substance of the divergent radii, little has been added to preceding contributions. The different explanations and theories which many authors have published since, have tended rather to complicate than to clear up the history of these elements. The greater part of anatomists and of physicians have even confounded in a single order of descriptions and considerations the epithelium which carpets and adheres to the capsule, and the *cells of the lens*. Some have said that the fibres proceed from the *epithelium*, becoming transformed into tubes, (Kölliker;) others, having perhaps only seen the cells of the lens placed in juxtaposition and become polyhedric, and not the epithelium, have said that it was not an epithelium, but special cells, which they found in the capsule, on the anterior face of the lens—while they have in reality found both. There can be no doubt, on reading the descriptions and the figures indicating the diameter of the *globuli lentis*, that under this name many authors have confounded together: 1st. The *cells of the lens* or the *humor of Morgagni* transparent, usually provided with nuclei, &c.; 2d. The clear drops, limpid, without color, or slightly rose-tinted, differing very considerably from one another in volume, which exude from all the elements of the lens after death, and in greater quantity in proportion to the time which has elapsed since death. Several observers, indeed, have seen only these drops, and not the cells.

der the form of lines, points, &c., variously arranged, or one uniform opacity. In all these cases the lesion is the same, the difference being only in extent. The alteration of the cortical layer of the lens is due to the facts that, in consequence of derangements of the molecular nutritive process of renewal, and the development of its elements, the latter have undergone morbid modifications of structure, of which the following is a description:

These alterations consist principally in a tendency to a more granular condition, with a ribbon-like flattening of the tubes, which, at the same time, lose their nuclei. This granular condition manifests itself also at times in the serrated fibres. The cells of the lens have disappeared, and are reduced to granules, or rather, from being homogeneous and hyaline, have become granular. At the same time there are produced, between the flattened tubes, free molecular granules, minute limpid drops, and oil-globules; these latter have exuded from the substance of the elementary cells, or perhaps have preceded their disintegration.

There is, besides, a formation in this superficial layer of solid corpuscles, rounded, or of various forms, homogeneous or granular, imbedded or not in a substance of a waxy, homogeneous consistence. Finally, there is sometimes a deposit of phosphate of lime, mingled with traces of the carbonate of the same base. These various alterations result in a transition in the soft layers of the lens, and sometimes in its hard nucleus from their perfect homogeneousness and transparency, to a heterogeneous condition: to such an extent that the light, instead of passing through these tissues, is reflected by these various particles, and assumes a white or grayish tint, as we see occurring in every granular or heterogeneous substance on which the light falls.

Second Species—Liquid Cataract.—This presents a milky aspect, and there is found contained within the cavity of the capsule, as in a cyst, a whitish liquid, in which floats the hard nucleus of the lens. This liquid is composed of a fluid, holding in suspension fat-globules, corpuscles, and solid granules.

It is the change of the normal elements of the superficial layer of the lens to the condition of a liquid, holding in suspension and emulsion the aforesaid corpuscles and globules, which causes its reduction from a state of homogeneousness and perfect transparency to one in which the light can only traverse it imperfectly. It reflects it with a whitish color, as does every liquid holding in suspension solid corpuscles and drops of a liquid heterogeneous as compared with itself.

Third Species—Hard Cataracts.—These cataracts preserve to the

centre the same anatomo-pathological composition as the soft cataracts; and this is not dependent upon the presence of elements essentially differing from those of the normal lens, if we except the solid corpuscles, whether granular or not, and the fat-globules which have exuded from pre-existent elements in a state of alteration.

The lesion consists specifically in an intimate modification of the cellular elements of the lens, causing them to become more solid, each one individually, and more adherent to one another than in their normal state. At the same time the elements, thus modified, become more granular, one of the essential causes of the opacity; the other causes being the production of solid corpuscles and the exudation of fat-globules.

Fourth Species—Stony Cataract.—This is rare, and is due to an incrustation of the anatomical elements of the soft and hard portions of the lens, which, however, are not destroyed. In this form of cataract the lens is of a grayish or chalky-white color.

It is hard and dense, especially on the surface, and friable, as though granulated; sometimes throughout its entire thickness, while at others it may present the stony condition only on its surfaces, the nucleus remaining little altered.

The lesion consists essentially in a calcareous deposit, principally composed of phosphate of lime, accompanied by a small proportion of the carbonate of the same base, incrusting, molecule by molecule, the elements of the lens, but not rendering them unrecognizable, if we dissolve out the salts by means of weak acids.

The action of these agents enables us to recognize here, also, spherical corpuscles, analogous to those of the hard and soft cataracts, which are also incrusted with the calcareous phosphate.

Second Class—Capsular cataract.

First Species—Pseudo-membranous capsular cataract.

This, as its name indicates, is characterized, anatomically, by the production of filaments, or of a fine pseudo-membranous layer, which probably originates from the iris, having been in communication with it, and ceases to adhere to it while it remains fixed to the iridial face of the anterior crystalloid, to its centre especially, which is its most prominent part. The morbid production consists of a non-vascular tissue, firm, somewhat difficult to tear, of a striated aspect; the striæ being sometimes undulatory, and presenting on laceration a lamellar rather than a fibrous structure. This tissue is usually incrusted, but only at a definite period after its appearance, by a quantity of microscopic granules, generally of a rounded form, composed princi-

pally of phosphate of lime, with a little of the carbonate of that base.

Second Species—Phosphatic Capsular Cataract.—This is characterized by the production of granules similar to those in the preceding class, and of the same nature, which are imbedded in the substance of the anterior crystalloid, but on its iridial aspect only.

The opacity manifests itself when these granules are sufficiently large and closely approximated to interfere with the transmission of light, and form masses of sufficient size to be perceived by the surgeon, under the form of spots, of lines, or of whjtish points. It is much more rare than the preceding form. ☞

Preliminary Report on the Mortality and Sickness of the Volunteer Forces of the United States Government during the Present War. By E. B. Elliott, Fellow of the American Academy of Arts and Sciences, and Actuary to the U. S. Sanitary Commission.

General Mortality of the Volunteer Forces.—From careful comparison and discussion of official data*—certain allowance having been made for estimated deficiencies in the returns—it appears that the number of *deaths* in the volunteer forces of the United States during the present rebellion, ("home-guards" and other bodies not in active service, not included,) has been at the annual rate of *fifty three* (53.2) per 1,000 numerical strength—of which about forty-four (44.6) were from disease and accident, and nine (8.6) from wounds received in action. The rate among the commissioned officers was thirty-three (33.2) per 1,000, and among the enlisted men fifty-four (54.0) per 1,000.

It is believed that the above rates are somewhat understated, full allowance not having been made for probable defects in the returns.

They also, for another reason, understate the actual experience of those entering the service—deaths which occur during the year among those discharged from or otherwise quitting the service, not being taken into the account. Little or no information concerning the mortality of this class is at present on record. Eventually, however, the records of the Bureau of the Commissioner of Pensions may be expected to furnish important information in regard to it.

If we assume that the rate of mortality experienced by those who quit the service (by discharge for disability, desertion, or otherwise) is the same as those continuing in the service, to wit, 53 per 1,000—a very moderate estimate, since those discharged for disability are justly presumed to be at the time, in point of health, inferior to their

*From the monthly Casualty returns made to the office of the Adjutant-General—many regiments, however, neglecting to make returns.

comrades who remain—the estimated annual rate resulting would differ little from 65 per 1,000.

It appears from the returns that while the death-rate from wounds in action is greater with officers than with privates—being respectively $11\frac{1}{2}$ and $8\frac{1}{2}$ per 1,000—the death-rate of officers from disease and accident is much smaller than that of privates—22 for the former to 46 for the latter—and that the rate from all causes (embracing both disease and violence) is *less* with the officers than with the men—the entire rate for officers being 33, and for men 54 per 1,000.

It follows that the mortality (or liability to death) of officers from wounds received in action is about *one-third* (more exactly, 34 per cent.) *greater* than of the men; that their mortality from disease and accident is but about *one-half* (or 48 per cent.) that of the men; and that their liability to death from all causes (both disease and violence) is nearly *two-thirds* (or 61 per cent.) that of the men. The proportions that die of wounds out of the entire number wounded, and of disease out of the entire number taken sick, cannot be obtained from the returns now under investigation.

Another noticeable fact is the excess of the mortality due to disease and accident over that due to wounds in action—*two thirds* of all the deaths of the officers and *five-sixths* of those of the men resulting from disease and accident; the remaining one-third and one-sixth, respectively, being caused by wounds received in action. In the war of the Crimea, *seven-eighths* of the mortality in hospitals of the British troops during the entire campaign were due to disease, and one-eighth due to violence (this last term including deaths from accident, as well as deaths from wounds received in action.) In January, 1855, the month of the greatest mortality of that campaign, thirty seven thirty-eighths (or 97 per cent.) of the entire mortality of the British troops resulted from disease.

Mortality by Seasons and Rank.—According to the returns, the average annual death-rate for the summer months (June, July, and August) was twenty-one (21.2) per 1,000 strength—of which thirteen (12.8) were from disease and accident, and eight (8.4) from wounds received in action; the death-rate of the commissioned officers being sixteen (16.0) per 1,000, and of enlisted men, twenty-one (21.4) per 1,000.

During the fall months (September, October, and November,) the average annual death-rate was thirty-six (36.0) per 1,000 strength—of which thirty-two (31.6) were from disease and accident, and four (4.4) from wounds in action; the death-rate of commissioned officers being thirty-two (32.1) per 1,000, and of enlisted men thirty-six (36.1) per 1,000.

During the winter months (December, 1861, January and February, 1862,) the average annual death-rate was seventy (70.3) per 1,000—of which fifty-eight (58.4) was from disease and accident, and twelve (11.9) from wounds received in action; the rate obtaining from all causes with the commissioned officers being thirty-six (36.1) per 1,000, and with enlisted men seventy-two (71.7) per 1,000.

Accordingly, it appears that the general mortality of the army has

been gradually increasing since the commencement of the war; the rate for the autumn months being about *twice* (1.7 times) that indicated by the returns for the summer period, and the winter rate in turn *double* (1.9 times) that of autumn.

The defects in the earlier returns are believed to be greater than in the more recent; and the apparent difference between the winter rates and those of the summer and fall should, perhaps, be attributed in part, at least, to deficiencies in the returns of deaths for the earlier periods of the war.

Mortality by Localities whence Recruited, and by Rank.—The annual death-rate of the troops recruited in the New England States, according to the above-mentioned data, was thirty-six (36.1) per 1,000 strength—of which thirty-one (30.8) was from disease and accident, and five (5.3) from wounds in action; the rate for commissioned officers being sixteen (16.3,) and for enlisted men thirty-seven (36.7) per 1,000.

For the Middle State Group (including with the Middle States proper, the States of Delaware, Maryland, and Virginia) the annual death-rate was thirty (30.1) per 1,000 strength—of which twenty-seven (26.9) was from disease, &c., and three (3.2) from wounds in action; the rate for commissioned officers being twenty-two (22.4) per 1,000, and for enlisted men thirty (30.4) per 1,000.

The annual death-rate for the New England and Middle groups combined was thirty-two (31.6) per 1,000 strength—of which twenty-eight (27.9) was from disease and accident, and four (3.7) from wounds in action; the rate for commissioned officers being twenty-one (21.0,) and for enlisted men thirty two (32.1) per 1,000.

The rate for the Western Group (including, with the Western States proper, the States of the Southwest) was ninety-five (95.0) per 1,000 per annum—of which seventy-seven (76.8) were from disease and accident, and eighteen (18.2) from wounds in action; the rate for commissioned officers being fifty-nine (58.8,) and for enlisted men ninety-six (96.4) per 1,000.

It will be remarked that the mortality of the armies recruited at the West (and which as a rule operate at the West) is almost precisely three times (3.01) that of the troops recruited in the Middle and New England States (and which as a rule serve with the armies at the East,) the Western rate from wounds received in action being five (4.9) times, and that from disease and accident a little less than three (2.8) times as great as the corresponding Eastern rates.

Sickness-rates by Localities whence Recruited, by Seasons and by Rank.—A like contrast is observed in the *sickness-rates* of the troops East and West, the rate of the latter (one hundred and sixty-one per 1,000) being more than twice (more exactly 2.1 times) that of the former (namely, seventy-six per 1,000;) the average constant sickness-rate for the *entire* army, so far as returned, being one hundred and four (104.4) per 1,000 strength.

The constant sickness-rate for commissioned officers appears to have been only about two-thirds (or 65 per cent.) that of the enlisted men;

the rate for the former (officers) being sixty-nine (68.8) per 1,000, and for the latter one hundred and six (105.9) per 1,000.

Like the rates of mortality, the rates of constant sickness appear to have been greater in the fall than in the summer, and greater in the winter than in the fall; these rates according to the summer, fall, and winter returns being respectively seventy, (70.2,) ninety-two, (92.2,) and one hundred and eighteen (117.9) per 1,000 strength.

Excess of the Rates of Sickness and Mortality of the Forces at the War—Causes.—There is reason for the belief that the excess of the rates of sickness and mortality in our Western armies over those in the East is due, in no small degree, not merely to the greater activity of the former in the field, to over-exertion and exposure, as the result of severe and long-continued marches, and to stubborn and deadly encounters with the enemy in arms; but also, to badly chosen camp sites, to imperfect and neglected drainage, (the nature of the surface and soil not unfrequently being such that suitable camp sites, free from malaria, and affording ample facilities for drainage, could not be found if sought;) to the too crowded condition of hospitals; to less of variety in food, (soft bread and desiccated vegetables in very many Western regiments being seldom or never had,) and to less of skill and care in its preparation; to water of impure quality, and sometimes of insufficient quantity; to the greater disposition on the part of the soldiers to neglect appliances for personal comfort; and to the greater neglect of, or a lack of means for enforcing, cleanliness of person and camp.

Average Strength of Regiments.—The average strength of each of the regiments according to the entire returns, is 872; of which there are constantly 91 sick, and 781 effective; also, of which 35 are commissioned officers, and 837 enlisted men; the latter embracing non-commissioned officers and privates; the commissioned officers constituting four per cent., (4.0,) and the enlisted men ninety-six per cent. (96.0) of the entire strength.*

The average strength of each of the Eastern regiments (comprising those from the New England and Middle Groups of States) is 864; of which number 66 are constantly sick, and 798 effective. The average strength of each of the Western regiments, as returned, is 892; of which 144 are sick, and 748 effective.

Rate at which the Regiments have been Recruited.—According to the returns, the several regiments or corps of the entire army have been recruited in excess over discharged for expiration of service, during the nine months from June 1st, 1861, to March 1st, 1861, at the rate of 230 per 1,000 enlisted men.

The rate at which the regiments serving in the East have been recruited is 273 per 1,000 per annum. The rate of recruiting at the West has been 149 per 1,000 per annum.

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*According to the act of Congress approved July 22, 1861, the number of commissioned officers was fixed at thirty-eight; and the number of enlisted men at from 854 to 1,034; these last numbers include a regimental band of two principal musicians and twenty-four musicians, and also ten wagoners, one to each of the ten companies composing the regiment.

Rate of Recruiting Necessary to Supply Losses by Mortality and other Casualties.—To supply the continuous *losses* in the ranks of the enlisted men in the armies East and West, other than losses arising from expiration of service, requires recruits at the rate of nineteen (19.1) per 1,000 per month; or 229 per 1,000 per annum; of which last-mentioned proportion, 54 is the number required to supply the annual loss from deaths; 100 the annual loss from discharged from service, (mainly for disability;) 14 to supply the annual loss from missing in action, not afterwards accounted for; 50 to supply the annual loss from desertion, the deserters not subsequently returning to duty; and 11 the loss from other causes, specified and unspecified.

To supply losses among enlisted men in our Eastern armies, requires recruits at the rate of nineteen (18.8) per 1,000 per month, or 226 per 1,000 per annum; of which latter proportion 32 is the number required to supply the annual loss by death; 100 the annual loss by discharge from service, chiefly from disability; 79 the annual loss from missing in action and from desertions; and 15 to supply the loss from other causes.

To supply such losses in our Western armies requires recruits at the rate of nearly twenty (19.5) per 1,000 per month, or 234 per 1,000 per annum; of which latter proportion 96 are required to supply the annual loss from deaths; 101 the loss from discharges from service, mainly from disability; 35 the loss from missing in action and from desertions, and 2 from other causes.

Requisites to Secure a Constant Force of Five Hundred Thousand Effective Men.—Since one hundred and four (104.4) out of every thousand men (officers and privates together) in the entire army is the constant proportion of sick, it follows that, to secure in the field a constant force of five hundred thousand (500,000) *effective* (or healthy and able) men, the nation must constantly maintain, in hospitals or elsewhere, an additional force of fifty-eight thousand (58,000) sick men, making the entire force maintained, both sick and effective, to consist of five hundred and fifty-eight thousand three hundred (558,300) men; four per cent., or 22,000 of this entire force, would be commissioned officers, and ninety-six per cent., or 536,000, enlisted men. And since to supply continuous losses in the ranks of the enlisted men, other than losses from expiration of service, requires recruits at the annual rate of 229 per 1,000 enlisted men, it follows that to keep the ranks of these 536,000 enlisted men constantly full, will require annually 123,000 recruits; 29,000 of these recruits being demanded to supply the annual loss occasioned by death; 54,000 the loss arising from discharge from service, mainly from disability; 27,000 for excess of desertions over returns of deserters to duty; 7,000 missing in action, not subsequently otherwise accounted for, and 6,000 the loss from other causes.

To repeat—assuming the returns of the period from the 1st of June, 1861, to the 1st of March, 1862, as the basis of calculation, it follows that to secure in the field a constant force of 500,000 effective men, the nation must not only maintain 58,000 sick men, but it must also recruit the ranks of the enlisted portion of these forces with new mate-

rial at the rate of 123,000 per annum, so long as the war shall last; a rate somewhat exceeding 10,000 recruits per month. Of these 123,000 annual recruits, 83,000 are to supply losses by death and discharges from service (exclusive of discharges for expiration of its term;) 34,000 for desertions and missing in action, (not returned or otherwise accounted for;) and 6,000 to supply other losses, specified and unspecified.

The five hundred thousand (500,000) effective men are equivalent in number to the number of men in 573 regiments of the average numerical strength, (that is, 872 men each;) and the 58,000 sick equivalent to 67 regiments of average numerical strength; the entire force of 558,000 men to be maintained being equivalent to 640 regiments of average strength.

So much respecting the casualties of our volunteer armies during the present rebellion.

We will now present for comparison the mortality rates of the soldiers in the armies of the United States during peace, and during the war with Mexico; also the rates of the British army and navy, "at Home" and "Abroad," during peace and war; also the rates obtaining among civilians in England and America at the military ages of life.

Mortality of the Army of the United States (Regulars) in Time of Peace.—The average annual rate of mortality for the army of the United States (regulars—mean strength 10,397,) during the eighteen years 1840–46 and 1849–59, (1847 and 1848, years of the War with Mexico omitted,) was 26 per 1,000; varying from 4 per 1,000 (at West Point) to 50 per 1,000 (on the southern frontier of Texas;) also varying from 9 per 1,000 (for the year 1845) to 80 per 1,000 (for 1849—a year noted for the prevalence of the Asiatic cholera, and also as immediately following the close of the Mexican war;) the highest rate of other years being 40 per 1,000 (that for 1841.) From the above it would appear that the mortality experienced during active operations by our volunteer troops during the present struggle, (*i. e.*, 53 per 1,000 strength,) is about double the rate experienced by our army (regulars) in time of peace (*i. e.*, 26 per 1,000;) and this rate (26 per 1,000) is in turn nearly three times as great as that of civilians at the same ages in England and America—rates varying from 9 to 10 per 1,000. [See Farr's English Life Table, 1841,* and Elliott's Massachusetts Life Table, 1855.†]

Casualties of the United States Forces (Regulars and Volunteers) during the War against Mexico.—The mortality of our troops during the Mexican war (1846, 1847 and 1848) appears, from returns to the office of the Adjutant-General, to have been at the rate of 118 per 1,000 per annum, 104 from disease and accident, and 14 from wounds

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* Sixth Report Registrar-General, (Eng.)

† Proceedings of the American Association for the Advancement of Science, at Montreal, 1857.

received in action—a rate about two and one-fifth times as great as that experienced by our armies now in the field.

Our forces in Mexico consisted of regulars and of volunteers, the former embracing the "old establishment" (so called) of 15,736, and an "additional force" of 11,186 men. The number of volunteers was 73,532; the aggregate strength, regulars and volunteers, amounting to 100,454 men.

The old establishment was engaged in active service in Mexico 26 months; the additional force, 15 months; and the volunteers, 10 months.

The mortality in the old establishment was at the rate of 104 per 1,000 per annum, of which 23 was from wounds received in action, and 81 from disease and accident.

The mortality of the additional force was at the rate of 162 per 1,000 per annum, of which 10 was from wounds received in action, and 152 from disease and accident.

The mortality of the volunteers was at the rate of 116 per 1,000 per annum, of which 10 was from wounds received in action, and 106 from disease and accident.

From the above it will be seen that the death-rate from wounds received in action was much greater on the part of the old establishment than with the new recruits, (the latter comprising both the addition to the regular force, and the volunteers;) and that the rates of the additional force and volunteers were nearly equal each to each, and less than one-half (or 43 per cent.) that of the old establishment. It will also be seen that the mortality from all causes, including both disease and violence, was less with the "old establishment" than with the "volunteers;" and very considerably less than that of the "additional force," being about seven-eighths (or 88 per cent.) that of the former, (the volunteers,) and five-eighths (or 64 per cent.) that of the latter.

The above rates, although representing the mortality during service, are less than the rates actually experienced by those entering the service. The last-mentioned rates, to be complete, should include the mortality occurring subsequently to leaving the service, among those deserting, resigning, or discharged from the service. There are no records in the War Department concerning such mortality.*

The proportion *discharged* from service for disability, per order, and by civil authority, was considerably greater with the volunteers than with the regulars, being respectively 150, and 63 per 1,000 per annum; the rates for the old establishment and for the additional force (regulars) being almost identical—63.1 for the former, and 63.0 for the latter.

The annual rates of loss from all causes, except expiration of service—that is, for deaths, desertions, resignations and desertions—during the war, were, for the "old establishment" 234, for the "ad-

* Valuable information bearing upon this point may doubtless be elicited from records concerning pensioners in the Department of the Interior.

ditional force" 275, and for the volunteers 334 per 1,000 strength; from which it appears that the rate of loss experienced by the additional force is one-sixth, (or 17 per cent.,) and that of the volunteers two-fifths (or 42 per cent.) greater than that experienced by the old establishment. The annual rate of such loss experienced by the entire force (regular and volunteer) was 296 per 1,000; a rate three-tenths (or 29 per cent.) greater than (229) the corresponding rate of the forces now in the field.

The foregoing rates respecting the casualties of our army in Mexico are doubtless somewhat understated, a consequence of comparing the several classes of casualties with the maximum instead of the average strengths of the period.

Mortality of British Armies in Time of War, at divers Periods.—In the Peninsula, under Wellington, during active service for the years 1811–14, the annual death-rate for the British troops was 165 per 1,000 strength; of which 113 was from disease and accident, and 52 from wounds received in action.

During war (from 1801 to 1805, inclusive,) the annual death-rate of the British army "at Home" (and consequently inactive) was 18.4 per 1,000; which rate somewhat exceeds that ordinarily experienced in time of peace by troops "at Home." This excess may be due, it was thought, to the "return to the depots of their respective regiments of men debilitated by the hardships of active service."*

During war the annual death-rate of the British army "Abroad" (for the years 1803–12) was 80 per 1,000; of which 71 per 1,000 was from disease and accident, and 9 from wounds in action.

During war at "Home and Abroad," (1793–1815,) the annual death-rate of British soldiers was 56 per 1,000; a rate not differing from that hitherto experienced by our troops (53.0) during the present rebellion. Of the above rate, 49.5 was from disease and accident, and 6.5 from wounds in action.

Mortality of the British Forces during the Crimean Campaign.—The troops composing the British element of the Allied Army in the war against Russia began to arrive at Constantinople early in April, 1854, and were distributed in camps in the vicinity of Gallipoli and Scutari. Reinforcements continued to arrive until near the close of the campaign. During June (1854) the army was concentrated in Bulgaria at Varna; on the 6th of September next it embarked for the Crimea; the campaign closing about the last of June, 1856.

The numerical strength of the regiments or corps engaged varied from 8,571 in April, 1854, to 47,751 in September, 1855; the average strength for the entire period of 2¼ years (from April 1, 1854, to June 30, 1856,) being 34,526.

The soldiers, on their arrival in Turkey, were in a healty condition, the mortality experienced for the first three months (April to June, 1854, inclusive,) being at an annual rate of about 9 (8.8) per 1,000; a rate almost identical with that of civilians of the same ages at

* Journal of the Statistical Society of London, (1856,) Vol. XIX., p. 235.

home. In July, the month following, the army being at Varna, the rate advanced to 160 per 1,000 per annum; the rate for the second three months of the campaign (namely, July, August, and September,) averaging nearly 300 (293) per 1,000 per annum, of which 96 per cent. was from disease. The rate for the next three months, (October, November, and December,) the army being now in the Crimea, was about 500 (511) per 1,000 per annum, seven-eighths of which was from disease.

The mortality of the campaign culminated in January, 1855, during which month the rate was nearly twelve hundred (1,174) per 1,000 per annum; of which rate, 97 per cent. was from disease. At this rate, to supply the loss occasioned merely by death, this army would need be replaced by a new army of equal numbers once in about ten (10¼) months.

The average rate for the first three months of 1855—the period of greatest mortality—was about nine hundred (912) per 1,000, of which 98 per cent. was from disease. At this rate, the entire army would need be replaced by recruits, equal in number, once in thirteen months.

During the next three months (April, May, and June,) the influence of sanitary operations instituted by the British Government began to be felt, and the annual death-rate for that period fell to two hundred and fifty (250) per 1,000, of which six-sevenths (or 86 per cent.) was from disease.

From this time the rate gradually and rapidly diminished to the end of the campaign; the annual death-rate for the first three months (January, February, and March,) of the year 1859 being but seventeen (16.6) per cent.

The following contrasts illustrate the influence and utility of sanitary operations. During the winter of 1854–5—embracing the seven months from September to March inclusive—the annual death-rate was six hundred and sixty-five (665) per 1,000; during the corresponding seven months of 1855–6 the rate was reduced to forty-eight (48) per 1,000; a change in large part due to the influence of the sanitary measures instituted by the Government. For January of the year 1855, the annual rate was 1,174 per 1,000; for January, 1856, under the influence of sanitary measures, it was but 25 per 1,000. For February, 1855, the rate was 979 per 1,000; for February, 1856—one year later—the annual rate for the same army was but 12 per 1,000. For the first five months of 1855 (January to May inclusive) the annual rate was 616 per 1,000; for the corresponding months of the year 1856 it was reduced to 11½ per 1,000.

The annual rate of mortality experienced for the entire period (2¼ years) from the arrival of the army at Constantinople, to June 30th, 1856, was two hundred and thirty-two (232) per 1,000; a rate about four and one-third (4⅓) times that (53.2) experienced by our armies now in the field. Somewhat more than nine-tenths (93 per cent.) of the above rate (232) was from disease; and about nine-tenths of the deaths arising from disease were due, as is now the case with the armies of the United States, to preventable or Zymotic causes; diseases

chiefly of the scorbutic and malarious type, which are readily checked by proper attention to the quality and preparation of food and drink, by judicious selection of camp sites, by avoidance of overcrowding in tents, and by efficient camp police.

British Armies in Time of Peace.—In time of peace, the annual death-rate for the British army "at Home," for various periods, appears to have been 16 per 1,000 strength, (15.90;) and "Abroad," 36 per 1,000, (35.80:) the average for the entire army being about 29 per 1,000.

British Navy in Peace and War.—In the entire British NAVY in time of peace, (1830–43,) the annual death-rate was 16 per 1,000, (15.97)—a rate almost identical with (15.9) that above mentioned for the British army "at Home," in time of peace.

In the British navy during war (1793–1815) the annual death-rate was forty-one (41) per 1,000 strength; of which 32 was from disease, 6 from shipwreck, and 3 from wounds in action.

Improved System of British Army Statistics—Results.—Under the new system of army statistics adopted by Great Britain, the mortality of the army "at Home" has diminished about one-half; the death-rate for the year 1859 being only 9 per 1,000; while the average of previous years in time of peace, for various periods, was 16 per 1,000, and for the ten years 1837–46, 17.5 per 1,000. In Newfoundland the rates fell, under the operation of the new statistical system, from 11.5 per 1,000 in 1837–46 to 4.8 per 1,000 in 1859. In Nova Scotia and New Brunswick it fell from 16 in the former period to 7.2 in the latter, and in Canada from 17.4 to 10.4 for the same periods respectively.

Under the new system—elaborated by a Commission consisting of Lord Herbert, Sir Alexander Tulloch, and Dr. William Farr—returns of the state and changes of each corps of the army are made WEEKLY to the Director-General. "The variable state of the army is thus brought clearly before the eyes of the Medical Department, the Commanding Officers, the Commander-in-Chief, and the Secretary of State, so that *evils*, INSTANTLY KNOWN, *can often be suppressed as they arise.*"*

The importance, in its bearing on the health and efficiency of the soldiers constituting our armies, of securing early and constant information as to the rates of sickness and death, and the immediate causes thereof, cannot well be estimated too highly or urged too earnestly.†

Conclusion.—From the facts herewith presented, it appears that the average mortality of our soldiers during the present war—exclusive

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* Dr. Farr—Journal of the Statistical Society of London, (1861,) Vol. XXIV., p. 473.

† On this subject, MISS NIGHTINGALE, in evidence taken before the Commission appointed May 5th, 1857, to inquire into the regulations affecting the condition of the (*British*) army, says, (p. 368,) "It is obvious that what is wanted is for the Commander of the forces in the field, and the Secretary of State for War, to be made *instantly* and *continuously* acquainted (both as to an army at home and in the field) with not only (1) the real proportion of mortality; (2) the real proportion of disease; but also (3) the kind of disease and mortality."

of three months men, and of home-guards and other bodies not actually in the field—is much *less* than that generally of other armies *in active service;* is nearly the same as the average rate of the *entire* British army in time of war, (1793–1815,) an army composed both of troops in active service "abroad," and of men inactive "at home;" is greater than that of the British army in the Crimea, late in the campaign, after the institution and vigorous prosecution of sanitary measures; *greater* than the rate experienced by armies, British and American, in times of *peace;* and very considerably greater than that obtaining, during peace, in the army of Great Britain, under the new and improved system for the observation, record, analysis and publication of its state and changes.

The conclusions forced on the mind from the comparisons are upon the whole encouraging; and we may confidently hope by efficient sanitary measures, based on systematic methods of inquiry and publication, to check and diminish the hitherto comparatively moderate but increasing rates of sickness and mortality.

NOTE.—Since the foregoing report was prepared, it appears that the proportion of sick men present with the Army of the Potomac on the 10th of June, 1862, was fifty-seven (57) to every thousand (including the present and the absent;) and that two hundred and fourteen (214) of the entire force were absent —208 being absent with authority, and 6 without authority.

Assuming one-third of the absent to be sick—a rate not inconsistent with previous experience—it follows that 128 per 1,000 of the Army of the Potomac (present or absent) were then sick; a rate about one-fourth greater than the average rate indicated by the returns for the entire army for the nine months ending with the first of March previous—and about seven-tenths greater than such experience of the regiments from the New England and Middle States.

[NOTE.—The Report is accompanied by a number of interesting and valuable diagrams, which we regret we are unable to lay before our readers.—ED.]

The Italian Campaign of 1859—*Medico-Chirurgical Letters from General Head-Quarters.* By Dr. A. BERTHERAND, Principal Medical Officer of the First Class, etc., etc. Translated for the AMERICAN MEDICAL MONTHLY.

LETTER V.

From Castiglione to Cavriana—A Battle-Field—The Wounded of Solferino and the Amputations at the Ambulance Station of the General Head-Quarters.

To DOCTOR F. BERTHERAND:

My Dear Brother—Battle-fields succeed and resemble one another with such uniformity in this Lombard land, the sadly privileged arena of war, that I will employ neither my time nor yours in detailing my journey from Castiglione to Cavriana, on the 26th of June, across the desolated regions of Solferino and Cassiano. For the first half of the way, the contest, rendered more desperate by the bare, unprotected nature of the ground, had swept away every trace of cultivation like an avalanche or an inundation. The vigorous stalks of the Indian corn lay prostrate everywhere, tangled and matted in the trodden

earth of the furrows. The long files of mulberries, the pride and the fortune of these rich plains, mutilated by grape, now stand only as ranks of decapitated trunks.

Of the boundary stones which mark out the fields from Castiglione to Mantua, as indeed on all the highways of Italy, some are torn up, others dashed into fragments, while those least injured bear terrible scars. Amongst piles of shakos, knapsacks, uniforms, and shattered arms—lies here a broken-down wagon—there the entire load of a caisson thrown out by the Austrians to lighten their flight. A little farther on, wheels and broken axles attest the precision of the fire of our new artillery. The walls of Cassiano and Solferino let the sun shine through them, pierced in the morning for defence, riddled at night by assault.

Between these two villages a piece of the enemy's artillery had been overturned in a ditch by the roadside, and its drivers being unable to drag it out, had abandoned it. Alone—like that other last friend of misfortune in the *Convoi du Pauvre*—the dog belonging to the battery would not leave the piece under which habit, and it may be affection, held him enchained. His restless barking and plaintive and despairing howls seemed to reproach his master with forgetfulness of that fidelity which honor should compel in the soldier's heart, and of which a new and touching expression was revealed by the instinct of this brute!

I promised, my dear friend, not to stop too long by the way: I leave on the left, then, these steep counter-forts, intrepidly carried by our troops, retaken, lost, taken yet again by the Austrians, and finally left victoriously in our hands. This square pyramid, planted on the crest of a hill, like a light-house on the end of a promontory—but, to *watch*, not to *enlighten* the neighborhood—is the *Tower of Solferino*, la Spia dell' Italia. Despite the brutal shocks of the cannon, there still remain fragments enough of the old feudal manor, long to consecrate this burial-place of heroes. A group of soldiers whose eyes were fixed with attentive curiosity upon a small mound of earth, showed me the spot where, the night before, the Emperor and his escort were the mark of the enemy's balls. One of them struck the horse of the Surgeon-in-Chief, Baron H. Larrey, a little in front of the shoulder. Hæmorrhage from the external jugular made the immediate application of a ligature to this vessel necessary; after which, our learned inspector resumed, with no sign of emotion, the place which a glorious heritage has assigned him during this campaign, the post of honor and of danger.

It is eleven o'clock when we enter Cavriana, a miserable straggling

village, whose ordinary resources have been still further reduced by the catastrophes of war. The imperial party could find but a single dwelling for their shelter on the night of the 24th, and this had been occupied until the last moment of the fight as the General Head-Quarters of the enemy. Thus, at an interval of a few hours, two Emperors had sat down under the same roof, at the same table, on the same memorable day, which was to determine for them fortunes so opposite.

Every one was, therefore, reduced to camping out under the walls of Cavriana, and my ambulance corps not being able by any mode of reasoning to claim an exception, I did as everybody else did. To cap the climax, a temperature of 84° in the shade soon changed our tents into sudatoria, in which it was impossible to stay, even flat on our backs. As for myself, I should never have been able to reduce to order the reports which the Surgeon-in-Chief and the Commissary demanded of me, but for the hospitality, not altogether disinterested, I imagine, of an old woman who lived near by. The presence of the soldiers evidently made her anxious for her back-yard, her mulberries, and her kitchen-garden; and she was probably not sorry to place her property, for the time being, under the protection of an *embroidered collar*. But to come to my report, of which the following is, in brief, the substance:

"Including three amputations of the thigh, performed immediately upon our arrival at Cavriana, among the wounded Austrians, whom we found laid under the galleries of a miserable guard-house, and whom for want of any other suitable premises, I was obliged to use my authority to quarter in the principal church of the village, the total number of operations performed at the ambulance station of the General Head-Quarters, from twelve o'clock on the 24th to the same hour on the 25th, amounted to forty-three. This number was composed of the following details:

Amputations.	Thigh	7
	Leg	4
	Arm	9
Disarticulations.	Forearm	3
	Shoulder	4
	Two fingers	2
	One finger	8
	One entire median phalanx	1
	One terminal phalanx	5
Resections.	Two metacarpals	1
	One phalanx	2
	Total	43

"11 of these operations were done by myself;
7 by the Principal Medical Director, M. Leuret;
7 by Surgeon-Major of the 1st Class, Leroy;
2 by Surgeon-Major of the 2d Class, Lecomte;
2 by Surgeon-Major of the 2d Class, Jacquemin;
7 by Assistant Surgeon-Major of the 1st Class, Guiches;
3 by Assistant Surgeon-Major of the 1st Class, Riolacci; and
4 by Assistant Surgeon-Major of the 2d Class, L'honneur.

"Though administered indiscriminately to all these cases, chloroform did not cause the slightest accident. We must not omit to mention here its singularly variable results as regards the promptitude with which insensibility was induced, and the precursory phenomena of anæsthesia. While the wounded Austrians dropped, so to speak, asphyxiated, as if struck by lightning, on the first inhalation, the French, laboring under a high state of nervous excitement, entered, as soon as the effects of the chloroform began to be felt, upon a stage of most energetic contraction, extremely difficult to control, and quite impossible entirely to subdue. I was the more struck with this condition from the fact that I had never noticed anything of the kind in my administration of chloroform to the numerous wounded of the different expeditions of Kabylia, in Algeria, or among the Kabylians themselves. I ought to add, too, that privates were especially affected in this way, to the almost total exclusion of the officers.

"A single death followed immediately after the operations just enumerated. The case was that of an officer whose thigh was amputated very high up by M. Leroy, for a badly comminuted fracture of the femur. Forty-three other wounded men have died, the victims of lesions which grant little grace—those of the chest, of the head, and especially of the abdomen."

I have few remarks to make touching the operative procedures which were employed. The circular method, offering a sure, simple, and generally easy manipulation, still remains the classical method, preferred by military surgeons. My object in performing several amputations or resections, in the presence of our *confrères* of the General Head-Quarters, by means of a single anterior or lateral flap—with complementary circular section of the soft parts, in the cases of the thigh and leg—was especially to demonstrate the superiority of this mode of operating. More expeditious, inasmuch as it dispenses with the laborious dissection of a sleeve of integument, it assures regularity and a good degree of thickness in the stump; and it avoids the inconvenience of corrugated central cicatrices in the application

of an artificial limb. Finally, favoring the prompt union of the soft parts, the mere weight of the flap bringing it down over the oozing surfaces, it prevents better than any other mode the projection of the bone or conicity of the stump. In the articulations of the extremities, take, for example, the shoulder, when the injury to the bone throws a doubt on the expediency of resection, what an advantage is gained by uncovering the seat of the difficulty by means of a large flap, and thus being able thoroughly to appreciate the extent of the wound, and with a complete acquaintance with its cause, to decide the operative indications dependent thereupon!

A unique case of hæmorrhage, occurring at Castiglione in the case of an officer, a short time after the dressing of an amputation of the arm, necessitated the ligation of the humeral artery in the wound. Dr. Leroy arrived in time to remedy the accident, and the patient has recovered. Was this a case of loosening and dropping off of the ligature as it is conceived may happen from the effects of the jarring of transportation? Or should we rather suppose that in the hurry and excitement of an operation performed upon the battle-field, a false knot had been applied? A third supposition is that the brachial, temporarily obstructed by a clot or a plug of muscular tissue, may have escaped the thread of the operator.

Let me say, in passing, and without offensive allusion to any one whomsoever, the ligation of arteries, after amputations, should be regulated not by the jets of blood which present themselves, but by an exact anatomical acquaintance with the principal vessels of the region. If they retract themselves from the surgeon's sight, they must be patiently and persistently sought for.

How often have well-known arteries been supposed to be abnormal, rudimentary, or wanting, and yet given rise to secondary hæmorrhage! I can cite an example of recent occurrence, the better as it concerns myself. Performing an amputation of the forearm, at the upper third, at San Martino, I was unable to discover the radial, nor was there any trickling from it. Wearied by fruitless searches, I at last decided to apply the dressing. In half an hour after it was dripping with warm blood. Removing the dressing, I finally succeeded in seizing my artery, which was oozing from the middle of a contracted and extremely dense fibrous envelope. I was obliged to cut through this in order to disengage the mouth of the vessel, which was deeply retracted. I ligated it, and the danger was over.

Besides the capital injuries which led to the amputations recorded above, I find in my notes as having been all visited and dressed:

8 fractures of the facial bones.
6 fractures of the thigh, (amputation not performed.)
2 fractures of the head of the humerus,(amputation not performed.)
1 fracture of the wrist, (amputation not performed.)
1 fracture of the tarsus, (amputation not performed.)
4 wounds of the head.
1 wound of the spine, (lumbar.)
2 penetrating wounds of the abdomen.
1 fracture of the leg, (amputation not performed.)
2 wounds of the bladder.
1 wound of the chest.
2 fractures of the forearm, (amputation not performed.)
1 wound of the pubes, with rupture of the urethra.
1 fracture of the hand.
1 wound of the larynx.
1 deep wound of the thigh, the projectile buried in the ilio femoral muscles.

I. triple wound of the left hip, the right thigh and the left elbow; this last, complicated with a comminuted fracture of the joint and a considerable loss of arterial blood, led to the immediate amputation of the arm in its continuity.

I. Wounds of the face, generally complicated with fractures of the teeth or jaws, imperatively demand the extraction of splinters of the first and second order; that is to say, those which are loose and those which are still somewhat adherent. To fulfill this indication properly, demands repeated examinations in the sinuses, the fleshy portion of the cheeks and the nasal fossæ under the tongue, and even into it when it is involved. When bony points protruding into the interior of the mouth threaten the safety of the tongue, or lead us to fear a subsequent interference with its functions, or deformity, they must be carefully resected. The difficulty is thus greatly simplified, and the duration, so tedious to the patient, of the fœtid discharge of wounds bathed in saliva, much abridged. These little operations, after which the wounds in question should usually heal well and rapidly, were often complicated at Castiglione with hæmorrhages from the arterioles lodged in the anfractuosities and canaliculi of the bones of the face. The tampon not proving always successful in checking the flow of blood, we employed the persulphate of iron, which M. Monsel has proposed to substitute for the perchloride; our experiments are not yet sufficiently conclusive to enable us to pronounce definitively on

the relative efficacy of this styptic. I give a few especially remarkable specimens of this kind of lesion.

A., a corporal in the 72d of the line, was struck under the lobe of the left ear by a ball, which, penetrating transversely and horizontally, passed out under the lobe of the right ear. I introduced successively my finger and a female sound along the course of the projectile, and discovered that it had grazed the posterior columns and posterior surface of the velum of the palate and lacerated the tonsils. There was no hæmorrhage nor a single splinter in this wound, which, when we consider the nature of the parts which surround it, was truly extraordinary.

M. M., a captain in the 11th Regiment of Artillery. The ball entered the middle of the lower lip and passed out behind the mastoid process of the left side. Destruction of the symphysis of the chin; extraction of a large splinter; hæmorrhage arrested by the persulphate of iron.

C., 1st Zouaves, 3d Battalion, 4th Company; ball passing from the right commissure of the mouth to the middle of the ascending branch of the maxilla of the same side. Extraction of several splinters at the orifices both of entrance and exit. Removal of two teeth left entirely bare.

Captain S., of the Engineers—a ball entering under the symphysis of the chin, and passing out between the lower lip and the anterior surface of the corresponding incisors. The margin of the bone is cut and broken, without destroying the continuity of the inferior maxilla.

In the case of G., a private of the 34th of the line, the ball, before penetrating the superior maxilla of the left side, between the ala of the nose and the labial commissure, lacerated the cheek in such a manner that the face presents a hideous spectacle. After having washed the wound and removed all the splinters, Principal Medical Director Leuret proceeded to adjust the lacerated strips of flesh by means of interrupted sutures, and succeeding in accomplishing a very useful restoration of the lip and nostril.

II. The fractures of the thigh in which we thought it our duty to reject, or at least to defer, amputation, justified our attempts at conservative surgery, by offering the following conditions: 1st, Simple or slightly comminuted fractures of the thigh, with the surfaces of coaptation more or less irregular, but without marked deviation of the extremities from the axis of the bone, as is observed when there is crushing or splintering of the bodies; 2d, The immediate extraction

of the splinters, which are loose or slightly adherent, and of inconsiderable size; 3d, The absence of grave complications, of hæmorrhage, of foreign bodies buried in muscular regions, etc.; 4th, The ability to remove the patient to a short distance from the field, in order to apply promptly, and at the same time without subsequent removal, the local and general means of treatment which his condition demanded.

Such was the situation in the case of Col. S., chief of the Engineer Staff of the 1st Corps, wounded on the outer side of the left thigh, at its upper third, by a fragment of a *ricochet* ball, which was extracted at the moment of receiving the wound, under the form of a small metallic disc. Assuring myself by palpation that the fracture was very simple, I applied Scultet's apparatus, with Surgeon-Major Jacquemin's assistance, and the Colonel was immediately carried to Brescia in his carriage, in which I caused a swinging litter to be arranged. All accounts received of him up to the present day promise a favorable union. Of the five others in the same category I have, as yet, no intelligence.

The official correspondence of the surgeons of hospitals in the interior of Italy announce to the Chief of the Medical Service of the Army, it is said, an altogether unlooked-for proportion of probable cures of fractures of the thigh, rescued from the harsh sentence of amputation. We earnestly pray that these facts, thoroughly verified and carefully registered, may prove so numerous and authentic that precise inductions may be drawn from them with regard to two points: 1st, The absolute curability of comminuted fractures of the thigh in armies; and 2d, The relative chances for the recovery of the patient with or without amputation.

III. Division-General L., of the 1st Corps, and Colonel M., of the 1st Zouave Regiment, were both wounded in the shoulder by balls. In the case of the first, the ball hollowed out a gutter along the external face of the head of the humerus. There seemed to me to be no complete fracture of the bone, only splintering to a slight extent. I removed the loose fragments, leaving the other to the eliminative efforts of suppuration. The General has since received a ball in the right groin, which, making its way horizontally towards the left groin, glided between the integument and the muscles in front of the pubes, as far as the superior insertions of the femoral adductors. Neither the finger nor the sound can detect anything at the end of this long tract, nor does any prominence or hardness denote the presence of the lead from without. The corresponding coxo-femoral articulation is

free; there is no pain, no difficulty of locomotion. Nature's must be the care of preparing its ultimate extraction, by an inflammatory process, terminating in an abscess; unless, indeed, accommodating herself to the presence of a foreign guest, she preserves it by surrounding it with an isolating cyst—a termination sometimes observed, but of slight probability in this case, considering the great motility of the region involved.

Colonel B's wound is equally severe, and even more curious. This officer contracted the habit, during a tour in Sweden, of wearing a flannel vest lined with buckskin. The projectile, striking the prominence of the shoulder, passed through all the clothing except the lining of the vest, which, yielding under the pressure, followed the ball like the finger of a glove, without tearing, to the very centre of the head of the humerus. The fact of the lining being whole, and its peculiar situation, contra-indicated any search for the body which caused the wound. I could only recognize the good condition of the bone and the absence of crushing and splintering, and remove a few grains of osseous matter from the wound. Not only was an operation useless in my eyes, but I thought it my duty to forewarn the patient against any propositions of resection that might hereafter be made to him by others. The result up to this time has justified my prognosis: the injury is being repaired well, and quite rapidly.

IV. I will cite farther, as attempts at conservative surgery crowned with success:

1st. The removal of the second and third fingers of the right hand, which I performed in the case of Commandant P., of the 5th Hussars, whose hand was horribly torn by a musket-ball. Beyond a small abscess in the palmar region, this wound, now under the skillful care of Assistant Surgeon-Major Miche, is daily progressing to cicatrization.

2d. The case of Captain P., of the 1st Regiment of Zouaves, whose cubitus and radius had been fractured by a ball passing over the posterior surface of the forearm. The sentence of amputation had been pronounced, and the wounded man, resigned to his fate, begged that the operation might be performed as soon as possible. Examination of the parts showed me a fracture double and comminuted certainly, but with a small number of short splinters, which could easily be extracted. Under such circumstances, what necessity is there for haste, particularly in the case of an upper extremity, where, with a little careful watching, secondary amputation will always find a timely indication?

3d. Commandant K., of the 72d Line, struck with a ball, which entered at the inner side of the articulation of the os calcis and the astragalus, and was extracted from under the skin of the dorsal region of the foot, against the external border of the cuboid. Numerous splinters were removed, resulting in the formation of a wide, free canal in the centre of the tarsus, having an inclination favorable to the escape of pus. Constant cold irrigation was employed. Its present condition is very satisfactory.

V. The extreme gravity of wounds of the skull, of the vertebral column, and of the abdomen, explains why we observe so few of them, in comparison to lesions of other parts of the body. They are, in fact, the wounds which produce immediate death most certainly.

Colonel B., of the 43d of the Line, presented a considerable loss of substance of the right parietal bone, with destruction of the *dura mater*, permitting the pulsations of the brain to be distinctly seen, in a portion of that organ, which protruded considerably through the opening. No symptom of paralysis or of compression for the first five days. On the sixth, acute encephalitis terminated his sufferings.

In the case of Captain B., of the 84th Line Regiment, who was struck with a ball full on the vertebral column, at the level of the eleventh dorsal vertebra, I witnessed hyperæsthetic phenomena of the most violent character. This unfortunate officer was instantly seized with paraplegia. Raising himself upon the bed which he occupied in the Civil Hospital, and writhing in the most agonizing sufferings, in his despair, he shrieked aloud for death. Inspection of the wound furnished no surgical indication of a nature to procure for him the slightest relief. The probability is, that the spinal marrow was irritated by spiculæ of bone, or by the roughness of the ball, altered in shape by striking the spine. Opium could scarcely bring momentary ease to the wretched man. He died after the expiration of several hours of fearful agony.

Lieutenant-Colonel B., of the 44th Line, pierced by a ball through the right loin, at the level of the kidney. The small intestine is implicated. Pressure and percussion reveal abdominal effusion. Vomiting on every attempt to drink his *tisane*. In the course of the evening peritonitis makes its appearance, and fæcal matters appear at the orifice of exit, in the centre of a fungoid protrusion of omentum. Death after forty-eight hours.

VI. As an instance of a wound of the genital organs, I cite the case of Captain T., of the 15th Line. A ball struck him a little above the crest of the right ileum, and was extracted near the middle

of the left groin. This long passage is fortunately subcutaneous for its entire length, but the penis must have been injured at its root. I question the patient, but he insists that he has lost no blood by the urethra; however, he has not urinated since receiving the injury. An exploring sound, introduced into the canal, stops at the pubes, where it enters a sort of *cul-de-sac*, (the track of the ball,) and immediately an abundant discharge of blood takes place through the catheter. I am ignorant as to what has become of this officer, in whom, be it understood, I allowed the sound to remain.

VII. General D. had his foot in the stirrup to mount, when he received a ball in the fold of the left buttock, which penetrated from behind forwards, in the direction of the pelvis. On his arrival at Castiglione I examined the wound, and my finger, reaching the ischium, finds this apophysis denuded and rough. Has it been broken or pierced by the projectile? Has the bullet, which evades all our investigations, fallen into the pelvis, or, reflected by the tuberosity, has it changed its course and entered the fleshy mass of the adductors of the thigh? In any case, the sharp pains which shoot along the sciatic nerve, the depth of the lesion, the extent and irregularity of its course, and the fracture of the ischium—limited, as we suppose it to be—indicate, in our eyes, serious danger.

VIII. I shall not stop long to consider penetrating wounds of the chest, whose interest lies principally in the subsequent progress of the effusion. To speak of them, I should need to follow my cases for a long time—longer than is permitted me. But the following is an example, as sad as it is rare, of the terrible consequences which may ensue from a lesion of the upper part of the respiratory apparatus. A private of the 1st Regiment of Zouaves was struck in the neck by a ball, which destroyed the middle portion of the thyroid cartilage. Although the foreign body was extracted and the wound dressed in the usual manner, the air passing out forcibly by this opeing penetrated the cellular tissue of the anterior cervical region. The œdema reached the glottis and the surrounding tissues. In vain are the parts explored; in vain do we attempt to free the trachea from its obstructions, and to re-establish the passage of the air by the introduction of a sound: the wounded man, unable to bear any interference, tore off every dressing, repelled every manipulation, and went off to die at the end of the ward in the most agonizing spasms of suffocation.

IX. A wound of the elbow, followed by amputation of the arm, in the case of a Corporal of the 74th Line, deserves to be reported, from

the singularity of the projectile which caused the injury. This young soldier had the elbow-joint pierced through and through by the square stick of a congreve rocket, (more than a yard long and two-thirds of an inch thick.) The most extraordinary part of it is, that this javelin remained implanted in the limb, whence he himself drew it, and made use of it as a cane to assist him in walking to the ambulance. On examining the joint after amputation, I pointed out to the assistants a quantity of fragments of wood firmly fixed in the articular cartilages, among the osseous splinters of the humerus.

X. One of the most interesting incised wounds of the campaign is, unquestionably, that of Lieutenant D., of the Mounted Chasseurs, who received a sabre stroke across the face at Solferino. The entire lobe of the nose, with portions of the cheeks, and a considerable extent of the upper lip, were detached. Being thus turned inside out, they fell, by their own weight, in front of the chin, leaving bare the superior dental arch, the anterior segment of which was separated, with its four incisors, two canines, and one molar. A suture, very dexterously applied by M. N. Perier, Principal Medical Director, so perfectly adjusted the borders of this immense solution of continuity, that the external deformity is scarcely noticeable. The loss of a part of the palatine arch, indeed, interferes somewhat with articulation; but this difficulty can easily be remedied by the aid of an artificial obturator.

XI. Authors on military surgery have related such very extraordinary facts with regard to the inclosure of projectiles of a large size as compared with the region in which they have been found buried, that such observations, although bearing most trustworthy signatures, have with difficulty acquired a place in the annals of the art. I confess that, for my own part, I have never been able to divest myself of a certain amount of distrust in regard to them. It is not without a motive, then, that I call attention to the two following cases.

Captain P., of the Algerian Sharpshooters, (a temporary regiment,) had the first phalanx of his right thumb fractured by a ball. The bone is fairly pulverized. There is but a single cutaneous opening, situated on its dorsal surface, shaped like a button-hole. Parting its lips, a metallic surface, apparently that of a fragment of a bullet, is perceived. Surgeon-Major Leroy proceeds, in accordance with my advice, to extract the broken phalanx, preserving the phalanget, as well as the flexor tendons, intact. To our great surprise, when the fragments were removed, he drew out from the bottom of the wound a large conical ball, entire, and scarcely at all flattened.

General A., of the Artillery, was struck on the morning of the 24th

by a ball, which shattered the left shoulder. He was brought to the ambulance of the Head-Quarters of the 2d Corps. The shock was excessive, and the loss of blood considerable; the nervous system so much depressed that any operation which would be attended by further hæmorrhage was considered dangerous before the commencement of a healthy reaction. On the following day his condition seemed favorable for the removal of the humerus, which was literally ground to dust. The articulation having been laid open, together with the anterior axillary region, the surgeons found, upon reaching the bottom of the wound, an *entire six-pound shot*,* so tightly imbedded between the infra-scapular fossa and the ribs, that it was with difficulty removed.

It was my sad duty to receive the General at Castiglione after the operation, and to bestow upon his desperate case all the attention called for by a terrible injury, and sympathy for a great man. But the shock sustained by the economy, the severe compression of the tissues by the forcible entrance and prolonged lodgment of a hard and heavy body, left but a small chance for the skillful operation of our colleague, M. N. Perier. Stoically resigned to the sacrifice in which his heroism had staked his life, the General yielded, on the 29th of June, to the fatal grasp of the gangrene which had attacked the wound. Not far from the bed of suffering, we could, all of us, see the projectile, brought from the ambulance by eye-witnesses of the operation—a glorious relic, coveted by curious science, but not likely to be long left in its possession by the pious veneration of family and friends.

I stop, my dear friend, for I feel that interest begins to flag—if, indeed, it has not too long since done so—in this necessarily barren sketch of so many pathological cases, so hastily observed. Such, however, is the characteristic physiognomy of military surgery; active, extemporaneous, adventitious, like the abrupt, rapidly-succeeding, and unanticipated events on which it depends. In the camp, the recollections of last night, even the impressions of to-day, rapidly vanish, ruthlessly pursued by the necessities of the hour and preparations for the morrow. While I have been trying, at twenty several sittings, interrupted on all sides, and in every possible way, to put upon paper a few

*In my Fifth Letter, which appeared in the *Medical Gazette of Algeria*, September 30th, 1859, it is spoken of as an eight-pound shot. Such was, in fact, the first estimate that was given me of the weight of this projectile, which has no analogue in the French Artillery. I have since had an opportunity to verify this assertion, by weighing a similar shot, which I picked up on the battle-field of Solferino; its exact weight was 7 pounds, 4 ounces.

commemorative outlines of this day of Solferino, a day of triumph for the army combatant—and not without honor, nay! glory, for the Medical Staff—the march of the army has brought us from Cavrian to the heights of Volta. Beneath us flows the Mincio, beyond which, the enemy, defeated less than a week ago, is preparing, they say, for our battalions a desperate resistance and new successes—for our ambulances, new opportunities for zeal and devotion. I am right, then, you see, in hastening to bring my journal up to the times, and, the better to hold myself in readiness for coming events, to bring this colloquy abruptly to a close by subscribing myself, as ever,

Your very devoted and affectionate brother.

VOLTA, *June 10th*, 1859.

REVIEWS AND BIBLIOGRAPHY.

Dentition and its Derangements. A Course of Lectures delivered in the New York Medical College. By A. JACOBI, M.D., Professor of Infantile Pathology and Therapeutics, etc. New York: Baillière Brothers, 440 Broadway. 1862.

"Dentition *without* Derangement" would have been a more appropriate title for the work before us, if, indeed, "Dentition" should have entered into it at all. If it be true that the profession and the public have made a "scape-goat" of this physiological process to conceal their own ignorance and relieve themselves of troublesome processes of investigation, it is none the less true that Prof. Jacobi has not been more scrupulous in making it a pretext for the public diffusion of his own knowledge, and the indulgence of his powers of research, on topics very remotely connected with his subject. That his book displays both these characteristics, we have neither the wish nor the ability to deny. But as regards the latter, we must be allowed to submit that for a foreigner, in America, to write a work on the growth of the teeth, and confine himself entirely to European authorities, when America is the acknowledged centre of dental art and science, is not only in bad taste, but indicates a disinclination to avail himself of the labors of our home investigators, scarcely to be reconciled with the catholic spirit of scientific inquiry. We must heartily thank him, however, for having virtuously abstained from defacing his fair pages by an array of stellated foot-notes, giving the chapter and verse of every one of his references, as his countrymen are so fond of doing. We

are quite ready to trust him for the correct quoting of his authorities, and perfectly willing to believe, if he wishes us to, that he has consulted all the musty folios that have treated of his subject back to the time of Hippocrates. And now that we have introduced that noble old thinker, we must give our readers the benefit of a quotation which Prof. Jacobi gives to his, as an illustration on our part of how singularly the desire to prove a certain thesis, and the conviction of its truth, warp our judgment as to the meaning of others. Will it be believed that the following, from the works of the Father of Medicine, is adduced as evidence that he did *not* "cherish the opinions of more modern doctors," that dentition *may* be a cause of disease! "In those children who have proceeded to the age in which they get teeth, there will occur a disagreeable itching in the gums, fever, convulsions, and diarrhœa, and particularly at the time in which the canine teeth will protrude." Can it be doubted that the old philosopher considered the mutual relation of these phenomena as something more than a mere coincidence in point of time? And yet such is the construction which our author would have us put upon it. In his desire to set the profession right—for he tells us that his work is intended for the profession only, which forbids the idea that he is combating *popular* error—he conjures up a frightful amount of ignorance and credulity on the part of his brethren for the sake of controverting it. A long string of diseases is trained out, such as glossitis, parotitis, retropharyngeal abscess, erysipelas, catarrh of the bladder, incontinence of urine, ischuria, balano-posthitis, and catarrh of the vagina, which we had never dreamed of attributing to dentition, and a most careful analysis of their history and symptoms, which well repays the reading, is given in order to prove that they may be produced by other causes, and that they do not result directly from the one in question. But when finally he sets up the man of straw, "slow dentition the cause of rickets," and makes a full tilt upon it in all the panoply of historic tables and chemical analysis, he becomes too Quixotic to provoke anything more than a smile.

We cannot but feel that these ably written lectures must lose much of their real value in general estimation, from the fact that they take extreme and indefensible ground on a subject which really needed a similar, but more moderate treatment. Doubtless the teeth of infants are made the "scape-goats" for much medical ignorance, and the doctors need badly enough to be told of this; but the Professor's sweeping exclusion of the teeth from infantile diagnosis will convince his well-informed readers of little else, we fancy, than that dental

science is too commonly a shadowy and unexplored region to even the best read of our medical authorities. If Prof. Jacobi, instead of ransacking European literature, some of it a generation old, had looked at some of our American dental works, common and accessible to all, he would have found the subject treated plainly, and yet scientifically, by men whose special business it is to study these very matters. America furnishes the world with dental surgeons, and needs only to be asked, to furnish it also with dental science. But the Professor must needs go to Delabarre for his sport, and elsewhere for such trash as this: "Transparency of teeth, according to Rudolph, and bluish-white color, according to Duval, are symptoms of rachitis; semi-transparency, as of horn, of herpetic predisposition; semi-transparency and milk-white color, of scrofula and tubercles; yellow and white spots, intermingled, of derangement of general development; small white, yellow, or brown spots, of commencing caries."—P. 23. Now nobody ever saw a *transparent* tooth, while bluish-white teeth are extremely common in this country, where rickets is so rare a disease. Any dentist, too, would laugh at the attempt to distinguish by the mere test of color, or of *intermingling*, the yellow and white spots of deranged development, and those of commencing caries; in fact, the one often passes into the other. We dwell on this passage, taken at random, as a sample of what is written and quoted as authority about the teeth.

Prof. Jacobi dwells at much length on the assertion that dentition cannot be a disease. We doubt if anybody ever supposed it was; neither is pregnancy, nor parturition, both purely physiological phenomena, but both, like dentition, none the less *causes* of disease. To quote from one of the excellent American works which the Professor does not seem to have seen: "Dentition is not, in itself, a morbid process, but a healthy physiological act. It would be strange, therefore, if it necessarily involved disorder of function and serious consequences to the subject. The truth is, that when naturally performed, under the favorable circumstances of sound constitution and good health, the cutting of the teeth is effected without pain or any collateral evil. . . . . Dentition demands a certain amount of constitutional energy to accomplish it. The rapid development of any organ does this. The changes which take place at puberty, and the evil consequences to the feeble, of the developments then completed, are illustrative of this fact. This demand is the severest test of functional and organic completeness in the child, and many will not bear it."—*Bond's Dental Medicine*, pp. 168, 170.

Here is the whole thing in a nutshell. Dentition is a healthy process, but an exacting one, and in infants *predisposed* to disease, may readily prove the exciting cause. The testimony to this fact is too full and respectable to be disposed of with a sneer; and yet this is all the answer our author deigns to give to Marshall Hall's very direct and weighty opinion.

"There is no practical fact, of the truth and value of which I am more satisfied, than that of the effect and efficacy of scarification of the gums in infants; and not in infants only, but in children. But the prevailing, I may say the universal, idea on this subject is, that we should lance the gums only when the teeth are ready to pierce through them, and only at the most prominent part of the gums, and as the occasion to which I have referred may require; and no idea of this important measure can be more inadequate to its real value. The process of teething is one of augmented arterial action, and of vascular action generally; but it is also one of augmented nervous action; for formation, like nutrition, secretion, &c., generally, is always a nervo-vascular action; and of this the case in question is, from its peculiar rapidity, one of the most energetic. Like other physiological processes, it is apt to become, from that very character of energy, pathological, or of morbid activity. It is obviously, then, attended with extreme suffering to the little patient; the brain is irritable, and the child is restless and cross; the gums are tumid and heated; there is fever, an affection of the general vascular system, and there are, too frequently, convulsions of various degrees and kinds, manifested in the muscles which move the eyeball, the thumb and finger, the toe, the larnyx, the parietes of the respiratory cavities; and the limbs and frame in general, affections of the excito-motor part of the nervous system, and of the secretion of the liver, kidneys, and intestines, affections of the ganglionic division of that system."

"It is to the base of the gums, not to their apex merely, that the scarification should be applied. The most marked case in which I have observed the instant good effect of scarification was one in which all the teeth had pierced the gums. Better scarify the gums one hundred times unnecessarily, than allow the accession of one fit of convulsions from the neglect of this operation, which is equally important in its results, and trifling in its character. And it is not merely the prominent and tense gums over the edges of the teeth which should be divided; the gums, or rather the blood-vessels, immediately over the very nerves of the teeth, should be scarified and divided. Now, while there is fever or restlessness, or tendency to

spasm, or convulsion, this local bloodletting should be repeated daily, and in urgent cases even twice a day. A skillful person does it in a minute, and in a minute often prevents a serious attack; an attack which may cripple the mind, or the limbs, or even take the life of the little patient, if frequently repeated. There is, in fact, no comparison between the means and the end; the one is trifling, and the other so momentous."

"There is a phrase among nurses, viz., the breeding of teeth, which may be taken as evidence that *before* the teeth actually reach the borders of the gums, they may prove the source of much irritation."

Let us quote another American witness directly on this point: "This simple operation (cutting the gums) often succeeds after all others have failed. We have frequently known children, after suffering the greatest agony for days and weeks, and until they had become reduced to mere skeletons, *obtain immediate relief without any other treatment*."—*Harris's Dental Surgery*, p. 131, sixth edition.

The number and completeness of such observations is too great to suffer from Prof. Jacobi's unlucky diagnosis, p. 129. A case from our own experience may be interesting on this point. About a year ago we were called to see a child, 11 months of age, in consultation. It had generally been a healthy child, but had had a similar attack some months before, just preceding the appearance of its first teeth, and ceasing therewith. Its present illness had already lasted a month, beginning with the simple vomiting of its milk—(the mother did not nurse it)—which grew more and more frequent, then became complicated with diarrhœa, which at one time was a very prominent symptom, but later gave place to constipation. There was a good deal of restlessness, especially at night. The child had grown rapidly thinner and thinner, until it was distressing to see; and yet all the time it had a craving appetite, and would take food eagerly, but only to throw it up again. The family doctor was at a loss, and the parents alarmed. We looked at its mouth, and found four incisors in their places, but none of the others promising to appear at present. As no lancet was at hand, we suggested that the doctor should cut the gum above several of the teeth, *until he felt the knife touch the tooth*. Next day we saw the child again. The gums had been cut late in the evening, and the child had passed the best night it had had for a long time. But unfortunately, (and it is very unusual,) one of the incisions had continued to bleed, and the child had sucked considerable blood. Styptics were applied, with temporary success, but bleeding again came on, until finally the solid nitrate of silver, sharpened and

thrust into the wound, stopped the leak. Thus the case was alarmingly complicated; and yet, without any other treatment, in three or four days the child was able to take chicken broth, grew rapidly stronger, and soon returned to its milk without any further difficulty. It is now a fine stout child, and its teeth are especially beautiful and regular.

Almost any practicing physician will recognize this as a type-case of similar ones which have occurred in his own practice. The relief given by the operation in such cases is too immediate and too decided to admit of its being called a *post* and not a *propter*. We can even recall an instance where a child was in the habit, when it began to feel the discomfort arising from the tension of the gum as a new tooth was forcing its way up, of going to its father, and with open mouth mutely ask for a repetition of the "scientific butchery" from which it had before experienced so much relief.

Now, if Prof. Jacobi had recognized what really exists as the result of disordered dentition, his very just strictures upon professional carelessness and maternal folly would carry greater weight. In his endeavors to instigate to a more earnest spirit of investigation, a more rigid and careful system of inquiry into the manifestations of each particular case, especially if an infant, and a more accurate, thorough, and conscientious diagnosis, no one will second him more cordially than ourselves.

While we are on this topic of "lancing the gums," a word may not be out of place as to the *modus operandi* of the relief obtained by incisions. The growing tooth is enveloped by a saccular membrane, continuous with the periosteum which surrounds the neck and fang, and secretes (afterwards) the cementum. This dental periosteum is a highly important structure, well worthy of far more study than it has received. All judicious dentists recognize and respect it, for they know how highly vitalized it is, and how fruitful of mischief it becomes in disease. It is to this organ that are due those long-continuing and deep-seated facial neuralgias, which, like many more obscure symptoms of nervous derangement, are often suddenly and permanently relieved by extracting a diseased tooth. Now this membrane, so powerful in the adult, and so persistent in its bad effects, but so easily deprived of all harmful power, is the inclosure within which the growing tooth is formed; and surely it is no stretch of credulity to believe that any fault or imperfection in this delicate process may as readily disorder the extremely sensitive nervous system of a child as may another form of diseased action in the same

organ disturb the action of the adult system. The purpose, therefore, in cutting, is to relieve any undue tension of this membrane, and to do this, of course the knife must penetrate to the tooth. Prof. J's fancy about *scratching* the enamel is one of those points which show that his lectures are based more on theory than on observation. Frequently, as was the fact in the case above related, the relief is required and obtained by incising, some time before the tooth finally appears through the gum. The Professor may disdain the term, but the nurses are not so far out of the way—disturbance frequently occurs when the teeth are "breeding."

The theory advanced in opposition to the performance of this operation—that the *cicatrix* resulting will form a dense, hard, band over the tooth, thus impeding its egress—we had thought to be pretty much exploded, and should have been inclined to place it among the "old women's fancies," over which the Doctor makes himself so merry. In the first place, the mucous membrane is possessed of such astonishing reproductive powers that its losses are repaired by almost the identical tissue which was destroyed; and in the second, it is an established fact, as we suppose, that a cicatrix even of the external cuticle is more readily absorbed than the healthy skin itself, in consequence of its deficient nutrition. Where do we look for the ulceration to take place from the pressure of an artificial limb—on the sound portions of the stump, or at the cicatrix?

There are three propositions on which the Doctor virtually founds his argument, which may be succinctly stated thus:

First.—No process or condition can be assigned as a cause for any pathological condition unless it can be distinctly proved to be the sole cause, both predisposing and exciting, and unless the result can be traced directly to it. His own very beautiful elucidation of the manner in which fever may be produced, by irritation of the dental ramifications of the fifth pair in dentition, based upon the theories of the German school and of Prof. Schiff, of Switzerland, is a sufficient answer to this.

Second.—The fact that a number of causes may exist for a certain result makes it highly improbable that any one of these causes is efficient in any one case. Thus, (page 61,) "Whenever salivation is produced in a young child, you have to bear in mind all the possible causes of catarrh of the mouth and salivary glands, or of nervous, either peripheral or cerebral, irritation. If you do, you will have less to say on teething or the teeth, but be more of a thinking, physiological physician." In other words, when a healthy child six months

old, which eats, sleeps, and performs all its functions well, is shown us, with a stream of saliva incessantly pouring from its mouth, we are to sit down and gravely consider whether the little innocent is suffering from "ulceration of the stomach, cancer of the stomach, the premonitory stage of vomiting, colic from helminthiasis, certain stages of pregnancy, hysteria, or intermittent or typhoid fever;" in all of which the professor tells us "there is superabundant secretion of saliva;" but we are by no means to consider the fact that a dozen or more adamantine points are forcing their way through the tissue of its gums, and that Nature is doing her best to prepare this tissue for their passage, and to control the irritation which would otherwise result.

Third.—That when a physician directs his remedies to a morbid condition, instead of, or in addition to, addressing himself to its cause, he virtually ignores the cause. "Nor is anything in the medicinal treatment, which can be taken to announce any direct connection between gastric catarrh and difficult dentition. Neither calomel, nor rhubarb, nor bismuth, nor alkaline carbonates, nor nitrate of silver, nor muriatic acid, all of them much used in the gastric catarrh of infantile age, is known to ease the protrusion of teeth; they are administered for their direct effect on the mucous membrane of the stomach."—(P. 75.) As well say that, because we administer laxatives in the constipation and buchu in the dysuria of pregnancy, we do not therefore acknowledge any connection between these disorders and the physiological condition which they accompany.

We admire in the book a fearless spirit of investigation, a bold attack upon professional ignorance and incompetence, and a careful summing up of modern pathological developments, in a manner best fitted to utilize them. The chapters on fever, on infantile paralysis, and on the neuroses, require and deserve careful study. But we cannot but think it would have been more useful had it taken less extreme ground, and been penned in a less dogmatic spirit.

In conclusion, we would point out a few clerical and typical errors, which should hardly have been allowed to creep into a work which had already appeared in print. The Professor is made to speak (p. 62) of "the removal of part or the whole of the tonsils, by means of a simple *bougie*."

On page 48, we read: "The mucous membrane of the mouth, although normal, is generally of a deeper color than the *exception perhaps of constipation*." The conclusion of the first part of this sentence is to be found on page 50, where it stands written: "I have to state finally, that there is no such thing as odontitis proper, the

dental tissue being too hard and deprived of *normal appearance of the gums.*" But where the "constipation" fragment is to find its antecedent, we leave to some one else to discover. ☞

EDITORIAL AND MISCELLANEOUS.

— Our readers will have seen from the first article of the present number, that our neglect of them has not been either intentional or avoidable. We can only express our sincere regret that they should have been kept waiting so long for our issues; but while doing so, we congratulate both them and ourselves that, notwithstanding the haste in which we left, we were able to secure the services of a gentleman whose previous acquaintance with the MONTHLY enabled him to take up the scattered threads of material which we left and weave them into three numbers possessing so much interest.

We trust, moreover, that the delay in bringing out the present number will not be considered entirely an evil, inasmuch as in consequence of it we are able to give our country readers, who we know are always interested in any matter which recalls to them their student days, and who enjoy comparatively few opportunities for sitting at the feet of Gamaliel, some idea of the opening lectures of the different schools in our city. It is a wise precaution of our State which makes students exempt from the call to arms, however great the emergency. Nor is it any reproach to the numbers of young men who present themselves this year at our institutions of learning, that they are here rather than on the battle-field. The youth who has spent years of preparation in patient study, in order that he may fit himself to become a student of our noble science, does not do his country so great a service by rushing into the ranks and shouldering his musket, as by repressing the tumultuous urgings of his impatient spirit, and quietly setting himself to work to acquire that knowledge which will enable him successfully to assuage the sufferings and heal the diseases of those who have borne a more active but not a more real or serviceable part in this great struggle. Therefore it is that we are glad to chronicle the fact that there is no falling off, but rather a gain, in the classes of nearly all the colleges.

Taking the schools in the order of the dates on which their courses commenced, the Introductory Lecture of the New York Medical Col-

lege was delivered on the evening of Monday, October 13th, at the College, by Prof. Holcomb, the Professor of Ophthalmic and Aural Surgery.

The night on which the Doctor had, himself, first sat expectant to hear the words of wisdom which might fall from the lips of some father in medicine, was not so far distant but that he could recall it for the benefit of his hearers, and placing himself in their stead, give them some wholesome advice as to how best attain the grand object with which they entered upon their labors. "I cannot doubt," he said, that

"The great desire of each of you is to become thoroughly accomplished physicians; and believing this, I think we may profitably consider what is the proper course for you to pursue in order to accomplish this most laudable object of your ambition."

After putting a series of searching questions to the young aspirants, as to the real motives which decided them in their choice of a profession, he continues:

"We have all heard persons asking, 'Can you tell me where I can find a *good doctor*?'

"Now what do the public mean when they inquire for a good doctor? This opens a broad question, viz.: What are the public which ask for a good doctor? From considerable observation, I know that the masses, or the public, differ very greatly in different countries as regards their views and conduct towards doctors of medicine. There are various reasons for this. In many European countries the profession is protected by laws so stringent that it is impossible for any but licensed practitioners to carry on their vocation. Hence the people are forced to be killed or cured; at any rate, to be treated by physicians authorized to practice their profession.

"In those countries the doctor of medicine is looked upon with great respect, and treated with an attention and consideration nearly equal to that shown the curate or clergyman. There the doctor is an important character in society; has an imposing bearing, carries himself with great dignity, and considers the respectful attention of the people as very natural; and the people look upon him as acquainted with all diseases, and as having the ability to penetrate the mysteries of the human system, and cure its ills, if within human power.

"Happy people, and fortunate doctors! Their faith saves them. But the truth is, that the masses in Europe are not as well-informed as in America. They allow, and expect, their superiors to do their THINKING. How is it with us in America? What man, woman, or child, even, allows another to do his or her thinking? No one has ever had the least idea of procuring a substitute in the conflict of minds. We each, as it were, fight on our own individual ability and responsibility, and meet with calmness the result of the warfare. Whatever this result is, we are ever better prepared for the ensuing struggle."

An alarming prospect, certainly, for the timid beginner, but the professor kindly reassured him with the assertion,

"If you know your profession as you should, you will be able to give a satisfactory answer to all those who can appreciate your reply: those who cannot, you ought soon to convince of their ignorance by a few well-directed *questions*."

His answer to the question which naturally follows, "How can we become good doctors?" was comprehensive and just.

"By patient and never-ending investigation of the human system in health and disease, and after death. In no other way, by no other process, can you attain a well-founded knowledge of your profession.

"You will immediately perceive that I propose no easy task. You must be life-long students of your profession. Not advancing is not only remaining stationary—it is *falling in the rear*. The question, as it appears to me, is, Are you prepared, not to become doctors of medicine, but students of medicine? It then comes to this: What is the requisite preliminary education to fit you to study medicine? I answer, the *best* you can have is the *necessary* education for you to become learned physicians. If any one thing has kept back, and is still holding down the medical profession in America, it is deficient early education—it is superficial teaching; *i. e.*, it is IGNORANCE. Oh! that our young men would thirst after knowledge! Oh! that they would better appreciate that, especially to the physician, 'knowledge is power;' not only medical knowledge, but all knowledge! Oh! that this seeking after gold would cease, and that the free and abundantly-flowing fountains of wisdom, which are so seldom sought, whose waters are so sweet and life-sustaining, would be surrounded by throngs of American youth, thirsting for and obtaining that which satisfieth!"

Then followed an ingenious illustration, which we have not space to give in full, showing that as those who would reap the benefits of a course of mineral waters must take them under intelligent advice, and after a proper preparation of the system by a previous course of hygiene and medication, so "those who present themselves at the fountains of knowledge" should be fitted by a thorough preliminary education to profit by the advantages there so generously poured forth. Adverting to the necessity for stricter legislative requirement, he enforces it by the following sad and mortifying truth:

"Let me talk more plainly still. I have known American medical students and doctors, who could not speak or write the English language correctly—whose compositions were disgusting and disgraceful to men of education and refinement. Is it inappropriate, then, gentlemen, for me to ask if you can speak and write your native language correctly? If you cannot, would it not be better for you to depart

from this place, and go where they teach the orthography, etymology, syntax and prosody of the English language?

"When your preparation is complete, you will receive double advantage from further opportunities to gain higher knowledge. There is nothing for which I would not sooner excuse a candidate for the degree of Doctor of Medicine, than ignorance of his own language. The medical student should be accomplished in all the elements of a sound education. He ought to have finished the chemistry of the schools, and be prepared for the higher departments of analysis and toxicology. Elementary botany should be as familiar to him as his alphabet. He should be able to read any ordinary *Latin*, and know sufficient of *Greek* to recognize instantly the derivation of medical and compound words. It is so easy to read *French*, that one, after a few months' study, ought to construe with facility almost any sentence. I would urge, also, the study of *German*. Its intimate connection with English, and the vast amount of German medical literature, render it almost absolutely necessary for one at least to read this language. We have, too, so many very learned German practitioners in America, that one unacquainted with their language would constantly find himself quite unpleasantly ignorant of the great advances made by our medical brethren in Germany. Again, it is a very common affair for young American doctors, after graduating, to visit France and Germany. We will suppose you are there. Consider, for a moment, what a ridiculous appearance you would present if Velpeau, at the Charity Hospital in Paris, should speak to you, and ask your opinion, as is often his custom, about some patient under observation. I need not describe to you how you would writhe with mortification at your ignorance, and how you would blush with shame that you could not reply intelligibly. You would immediately reflect that the waters of that spring were too strong for your constitution, and determine to take a mild course in French. Or suppose you were to present yourselves at the Charity Hospital in Berlin, Prussia. The keen eye of Virchow would soon detect you as Americans, and consequently he would feel his usual interest to find out if you knew anything. He might ask you about the pathology of some case in hand. In your confusion you would possibly answer, 'I no speak *Dutch*, doctor.!'" 'Oh! then speak English if you will,' he would reply calmly. I fear you would soon find out that he (like most German professors) knew much about English, and that you knew very little about pathology. So you would bear a double shame, and reflect but little credit on your native country."

"Ours is almost the only country where the mind of each individual is brought into active operation, where every channel is open freely to all, where each mind is individually responsible for its failure or success, where birth is not a passport to distinction, and where riches do not of necessity entail power on their possessor. This is the land, gentlemen, in which you will probably pursue the practice of medicine, and it is my solemn conviction that it is the most difficult place on the earth to practice any profession—and especially the profession of medicine. Why is this? The fact simply is, that there is hardly an

American youth but that, either in the common school, academy, or college, besides the elementary branches, has studied natural philosophy, chemistry, mathematics, botany, physiology, music, Latin, French, &c., &c., and almost always the heads of families have popular treatises on the allopathic, homœopathic, hydropathic, eclectic, and spiritualistic methods of treating diseases. In addition to this, they assume to be theoretical politicians and theologians. If they really knew all they think they do, it would not be at all objectionable—quite otherwise—but they have not yet learned that they really know almost nothing of medicine at least.

"*These* are the people with whom you will have to deal; they will ask more questions, raise more objections, have more reasons for doing a certain thing, propound more theories, relate more experiences, and state more similar cases cured in such a manner by such a doctor, than any people under the sun.

"These are the people who ask, 'Can you tell me where I can find a good doctor?'"

The remainder of the lecture was occupied with references to the several departments of the medical curriculum and introductions to the gentlemen filling them. The professor was particularly earnest in cautioning his class—

"To be faithful in their study of medicines and their uses; but not to try so much to learn certain prescriptions, as to ascertain the actual therapeutic properties and doses of vegetable and mineral remedies, together with their chemical composition. In this manner you will cease to be dependent on any one for given prescriptions for diseases—for you will as naturally make your own formulas, as will a man who thoroughly understands the principles of mathematics."

In speaking of his own branch, he said:

"To show you how these diseases are taught in Germany, I will state that Prof. Von Graëfe, in Berlin, lectured from November till March, once a week, on diseases of the cornea alone—and remarked, when closing, that he regretted that time would not allow him to finish what he had to say on the subject, but that he hoped to have the pleasure of meeting the students again the next season, when he would finish it in a more complete manner."

He concluded in the following earnest strain:

"You should regard it as your sacred duty to teach man how he may avoid disease, how he should live, so as to preserve his health and increase continually in mental and bodily vigor, until his allotted three-score and ten shall have arrived, and then, as his mind and body, sound as at birth, pass gradually into second childhood, his spirit, the perfected fruit of a well-spent life, will return to its Maker, and his body go down to the dust from whence it was taken."

The Bellevue Hospital School followed on 15th of October. The Introductory was delivered by the younger Flint, Professor of Phys-

iology; and a young and enthusiastic teacher in a young and vigorous school might well be pardoned for alluding, in terms of self-gratulation, to the brilliant success which has marked the commencement of this undertaking. The advantages of clinical instruction were thus ably set forth:

"Formerly teachers of medicine went into the most elaborate descriptions of diseases, their symptoms, treatment, &c., and the sole opportunities which were afforded the student for verifying these statements were in the few cases he was enabled to see with his preceptor in the intervals between the courses of lectures, and one or two cases which might, as an extraordinary thing, be shown to the class. The deficiency in this mode of teaching is too evident to require discussion; and the palpable necessity of illustration led to the gradual establishment of college clinics, and the inauguration of occasional clinical lectures in hospitals. But this did not meet the difficulty. Patients come into a college clinic and are seen by the lecturer for the first time. He has had no time to give the case proper study; he often feels compelled to give a definite opinion immediately, makes his prescription, and the patient is dismissed. The action of the remedies and the verification of the diagnosis are never known. Most of the class have hardly seen the patient clearly enough to recognize him again, even if they had the opportunity. The young student is discouraged with the apparent facility with which the diagnosis is made and the proper remedy applied; more discouraged, probably, than he would be, if he could follow out the case and attempt to verify what had been told him. To this is added an occasional clinical lecture at the hospital; but these take place so rarely, and the time is so much occupied with purely theoretical instruction, that the progress of cases is not and cannot be watched from day to day. The lectures are necessarily disconnected, and students reap hardly any more practical benefit from them than from the college clinics. Medicine is by no means an easy study. It requires for its acquisition the highest qualities of mind, and the most careful and systematic aid from a teacher. Mere descriptions of disease are always at the command of the student in his text-books. But he requires assistance in his study when he attempts to verify these descriptions in actual cases, and apply his theoretical knowledge at the bedside. Where clinical instruction is not constant and regular, and where it does not form a great part of the course of teaching, the student has merely repeated to him what he may find in books, and is left to make his own way at the bedside, where he most requires the aid of a competent instructor. A student thus educated may be able to pass a very satisfactory examination in the green-room; but in that self-examination at the bedside of his patient, where the responsibilities are overwhelming, his deficiencies will be fearful.

"In Great Britain the points which I have touched upon have been fully appreciated. There colleges are attached to the great hospitals, and a student has an opportunity of learning medicine by a study of actual diseases, not by a mere description of them. No

small hospital will suffice for thorough teaching; it must be of sufficient size to enable the teacher to illustrate, by selected cases, nearly all the diseases of which he treats in his regular course. As illustration is the only true method of teaching, it must not be left to chance to present cases of particular diseases; the school must have a sufficient number of patients at command to be able to show what the student will meet with in his practice. A complete course can only be given by presenting examples of all important diseases. These advantages can only be presented in a large hospital."

In allusion to the aims of the Medical Board and the happy results which had already crowned their efforts, the Professor said:

"This is an age of certainty and demonstration. All things must be considered doubtful until actually attained. Though we felt the same confidence in the system of our organization a year ago as we do now, the realization of our success, which is even beyond our hopes, is inspiring. When our first course of lectures commenced, the Faculty was earnest and hopeful; the friends of scientific progress, who had become interested in our scheme, watched anxiously its first trial; our aspirations were high; we would not be content with any partial success—we aimed to add lustre to Bellevue Hospital, as well as enjoy the advantages of its prestige and reputation. We aimed to be the first Medical College in the great City of New York, and the first in our great country; and hoped to see the day when the nation would be proud of our institution, and our diploma would rank with the best in Europe. Our hopes have been encouraged, and our aspirations are not diminished. While our beloved country has been convulsed by the most terrible conflict of modern times, our purpose has been unchanged. We commenced at an unpropitious time; but had we failed in attaining the success which we thought our due, we would have been but stimulated to greater efforts."

The unusual opportunities offered to the young practitioner by the present war were adverted to as follows:

"Science is universal. It belongs to no section and to no country. Friend and foe have an equal claim on the true physician. The noblest service that can be rendered by man to man, or by a citizen to his country, you will have in your power to perform when you are finally sent forth from these halls of instruction. To soothe the pain of those who bleed in our common defence, to restore to duty those who have passed through the fiery ordeal of experience, will be the office of those who may follow our armies. You, gentlemen, will not be forced to take your first practical lessons at the expense of those who are entitled to the benefit of experienced skill. There never was a time when the skill of experienced surgeons was as valuable as it is now. There never was a time when a young man just entering on his professional career was so liable to be taxed with the heaviest responsibilities. Think of the battle-field, where thousands may at any time be dependent on the knowledge and self-possession of a simple assistant surgeon. When any one of you may be compelled to

decide upon and immediately execute the most serious operations, with no one to go to for counsel, your acts perhaps known only to the soldier who is relieved, and to Him who notes the sparrow's fall. While the maddening excitement of battle is raging; while thousands are forgetting everything in the fury of attack, exposing themselves to dangers which, in moments of less excitement, would appal the stoutest heart, you may be called upon to remember what will be taught you in this room, and what you will see in the wards of this hospital. Without excitement, with no hope of the glory which is the soldier's ambition, you must perform your work of mercy. The soldier serves his country; the military surgeon his country, God, and humanity."

The student was encouraged to a diligent prosecution of his labors, not alone in the hope of winning a pedestal in the Valhalla of Science, but for the sake of a good conscience towards God and towards man, and of the enjoyment of the labor itself. We quote again:

"It is one of the great charms of our science, that it is never stationary; always progressive, and no one can lay claim to a scientific character if he stop by the roadside. But there is a great and important lesson, which you must learn in your student's life, which is, in itself, worth all the mere facts you may accumulate in your brain for years; and that is, how to study. The most laborious industry, and the most brilliant intellect, if used at random, may only render the possessor remarkable for great errors. In the annals of science are recorded the names of those who accomplish; not of those who might have accomplished, or who speculate on what may be worked out in the future. It is not only necessary for you to learn what has been accomplished in our profession; you must know how it has been accomplished; you must be taught how to work. In the lecture-room, it will be the duty of your teacher to sift the good from the bad; but this cannot be forever; you will soon have to judge for yourselves; and unless you have a correct method of study, you will too often be led astray. Endeavor to learn, then, how the great men of our science have worked, and you will be able to discriminate between that which will stand the test of time, and that which must fall before experience. There are men in our ranks whose names have become imperishable, from being connected with great discoveries. They should be your examples; and the discoveries are hardly more important to learn, than the processes by which they were arrived at. We cannot all make great discoveries; but when we reflect on the manner in which these great truths are developed, we can, most of us, contribute something to the general result.

"The idea that great discoveries are the results of inspiration, or the absolute necessities of genius, is erroneous. It is not the genius of one man, as a general rule, which makes a great advance in knowledge; it is the combined labor of many. The glory attached to the discovery of the circulation of the blood was reserved for Harvey; but the pulmonary circulation was described years before by Servet,

and the pulse was spoken of by Hippocrates. One of the most brilliant discoveries in modern physiology is that of the function of the pancreas. To Bernard, as most of you are aware, belongs this honor. But years before its discovery by Bernard, the pancreatic juice was obtained by Eberle, and its action on the fats alluded to. At the time of the experiments of Eberle, the necessity of the emulsion of the fats before they could be absorbed was not fully recognized. It was supposed that the chyle, which fills the lacteal vessels, consisted simply of the articles of food reduced to their final degree of elaboration; and the constitution of that fluid was comparatively unknown. Had the experiments of Bernard been made at that time, the discovery would not have been made; but the gradual march of science from the time of Eberle to that of Bernard brought it to a point when some definite change was known to take place in the fats; the object of finding the fluid which produced this change was well defined; and the intelligent experiments of the most eminent physiologist of the present age produced definite results. The most difficult of the books of Nature is the study of the physiologist. Nothing is translated from it without the most careful study. The experimentalist is continually propounding questions to Nature in the shape of his experiments; but to elicit a satisfactory reply, these questions must be intelligent. We must know what we are looking for; and, though of course the result of our experiments cannot be foretold, they must be made with a definite object. The reply to a physiological interrogatory which would not be understood in the days of Haller, is a revelation in the days of Bernard. It is the progress of science which gives to its votaries the clearer understanding; and when we ask to whom this progress is due, individual glory pales before the modest silvery light which shines from a thousand points, enduring from age to age. A thousand unpretending searchers after truth advance our beloved science to the point where a Harvey writes his name in letters of fire. Study, then, how to labor! Fit yourselves for a place among the number of those who cannot work for the glory of their profession without advancing the interests of the great human family!"

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"When, after years of preparation in order to be able to work for one's self, and after years, perhaps, of labor, a great discovery is made; when phenomena which had before been unexplained are accounted for for the first time; when to the eye of the patient physiologist are revealed the hidden mysteries of nature, and one sees what has never been disclosed before to mortal man, the happiness of that moment should outweigh the applause of the world. When, after years of patient investigation, Sir Humphrey Davy discovered the metal potassium, he is said to have danced around his laboratory for joy. This was not the selfish joy at the prospect of the renown which would be attached to his name by this great discovery; it was the delight of a just and self-sacrificing mind at seeing the glorious result of his long labors. Such are the possibilities of a few; but let not this discourage you, for we can all take our place among those more

obscure, but not less meritorious, who labor for the good of humanity, and without such great rewards, assist in the gradual progress of science."

The University and the College of Physicians and Surgeons opened their regular courses together on the 20th of October.

At the former, the students were welcomed to their five months' work by the well-known Professor of Obstetrics. If even in a learned treatise on a scientific subject Dr. Bedford finds it impossible to restrain the natural exuberance of his poetic and thick-coming fancies, it certainly could not be expected that on an occasion like this he should abstain from indulging both his hearers and himself in an hour's pleasant discourse not entirely confined to the severe dogmas of the schools, or destitute of rhetorical ornamentation. We should like to have been able to lay the entire address before our readers, but neither the author's consent nor our own limits would permit.

The following extracts will give an idea of its spirit and design:

* * * * * "The historian has given to medicine three principal eras or revolutions: the first embraces what may be properly denominated the fabulous period of the healing art, and is, as it were, a reflex of what was developed from its very infancy until the time of Hippocrates; the second unfolds the various reforms instituted by Hippocrates and his successors until the establishment of the school of Montpellier; whilst the third era, or revolution, is occupied with a discussion of the numerous systems or doctrines, which have sprung into existence from the creation of the school of Montpellier down to the times in which we live. It may, indeed, be remarked that these multiplied systems originated, as a general rule, in the admission of some new idea, or the discovery of some new scientific fact, the elaboration of which has introduced into the theory of medicine systems and doctrines not only in direct contradiction, but which have exercised a singularly unhappy influence on healthy scientific progress.

"It may with truth be said that the rude Therapeutics of our profession originated with the first pain experienced by the human family —it was, if you please, Instinct combined with Charity, which gave the first impulse to the Heart in its effort to appease human suffering. You see, therefore, that the eloquent and gifted Tully, in the dark ages of our calling, before the sun of science had made its way above the horizon, characterized it as almost divine in its nature: '*Homines ad Deos in nullâ se proprius accedunt quam salutem hominibus dando;*' and Le Clerc, a French author of no ordinary ability, in his valuable history of medicine, discusses with great cleverness whether the science of the Healing Art did not emanate directly from heaven: '*Si la médecine est venue immédiatement de Dieu.*' Thus it was that the first practical offerings of our science were the direct fruits of that cardinal and sterling virtue—Charity—the essence of which is to do good to one another, and feel for another's woes.

"The ministrations of our profession commenced in the market-places, and on the highways—they were without rules, principles, or methods Soon, however, they assumed another character—they were translated to the Temples. In these Temples certain absurd formulæ were deposited; and so sacred were they deemed, that they were placed under the immediate guardianship of the Gods. This was the starting-point of our profession; it has been called, not without reason, primitive, empirical, or popular medicine. Such, then, was our science in the early days of man; it derived its existence, as it were, from a physical necessity. Just as man was led to clothe himself, build his hut, or prepare his food, so did instinct teach him to seek for remedies in the hour of pain and sickness.

"The second epoch of Medicine was inaugurated by Hippocrates, who, as Celsus justly remarks, was the first to emancipate the profession from the trammels of superstition and the delusions of philosophy. This great man, this sound observer, entitled in all truth to be regarded as the Father of Medicine, was born in the first year of the 80th Olympiad, or between 400 and 500 years before the commencement of the Christian era. His birth-place was the Island of Cos; and it may here be mentioned that this illustrious sage was the cotemporary of Socrates, Herodotus, and Thucydides. Hippocrates was the founder of a school, the cardinal principle of which, like the eternal truths of Heaven, has withstood the whirlwinds of assault, and survived the bitter disputations of the controversialist. He taught that the philosophy of medicine is based on the fundamental dogma that there is in every living being a force, a power, a nature, which is formative, conservative, and healing. What a tribute to truth—what an emphatic demonstration of the profound thought of this great Apostle of our science!

"In accordance with this fundamental principle, Nature exercises, in the affairs of the human economy, a sovereign influence—she presides over the formation of our organs, and directs their functions; she is the recipient of disturbing agents, and she promptly reacts against them. In one word, she determines the progress, development, and termination of diseases by certain pre-established laws, which are peculiar to her. The teachings of Hippocrates were embodied in the principle—*Natura sola medicatrix*—Nature alone cures disease. This is the key-stone of the arch; and when fairly tested by the laws of physiology, pathology, and therapeutics, it will be regarded by all right-thinking men as constituting the only true basis of hope for the restoration of the deranged mechanism to its just and natural equilibrium. The physician, gentlemen, is but the minister of nature. *Medicus curat morbos, natura sanat.* These words define the whole of the healing art—its principles, its tendencies, its objects. Again, this fundamental dogma, thus propounded by the Father of Medicine, is not limited, ephemeral, or partial. On the contrary, based as it is on truth, it will abide the test of the strictest analysis. It is, I repeat, the foundation-stone of our science; it gives direction to thought; it substitutes for vague theory and worthless hypothesis one great, conclusive, irresistible principle. It is this very principle which imparts

permanence to our science—it makes it a positive reality, and completely annihilates the absurd argument that medicine is simply a speculative art.

"In alluding to this great dogma of Hippocrates, Baglivi, one of the medical lights of his times, in his first work, published in 1696, entitled, *De praxi medica ad priscam observandi rationem revocanda*, most emphatically exclaims: 'This principle of the Father of Medicine is sound and immutable—its truth will be eternal, because it is the very oracle of Nature herself; nor can it ever be disturbed by the future progress of scientific research.' It must, however, be admitted that many of the disciples of Hippocrates have deviated from the path so plainly pointed out by their illustrious master; they have yielded to the delusions of vanity, and tired, as it were, of the patient and fascinating investigation of the laws of nature, they have, in lieu of these, substituted absurd and fantastic hypotheses, which amount to little more than a mere rope of sand. They have gone further—History, the *litera scripta*, proves beyond a peradventure that they have, by garbled interpolations, falsified the writings of their preceptor, so that, as has been happily said, it is difficult to distinguish between the gold of the teacher and the dross of the scholar. Hence, new systems of medicine were introduced—such as those of the dogmatists, empirics, methodists, eclectics, &c.; these, like all things without an adequate foundation, enjoyed but a transitory existence, and were ultimately forced to yield to the majesty of truth. They prevailed, however, to a greater or less extent, until the time of Galen, who not only vindicated the writings of Hippocrates, and assumed the labor of commenting upon them, and expounding, as no one had yet done, the doctrines of the venerable father of our science.

"Galen, in his views of disease, distinctly tells us—'I surrender myself to the exclusive guidance of nature and Hippocrates.' But the genius of Galen sufficed, only for a short time, to restrain the human mind from indulgence in rampant love for novelties and wild conjecture; and it was not until 1666 that the great Sydenham, the Hippocrates of England, as some of his admirers have called him, published, in his *Methodus curandi febres propriis observationibus superstructus*, a revival of the inductive method of investigating disease, according to the original interpretation of Hippocrates himself. Sydenham, the clear thinker, the sound logician, the ripe observer, in his patient pursuit of medicine, soon detected the fallacy of the doctrines contained in many of the books, and, as a general rule, held in utter contempt the medical writings of his time. It is recorded on the authority of Sir Richard Blackmore, that when the opinion of Sydenham was requested as to the best authors to be referred to for the purpose of acquiring a just knowledge of practice, he told the inquirer '*to read Don Quixote.*' This was, indeed, a withering commentary on the existing state of our science, and a graphic portraiture of the melancholy results growing out of a departure from the fundamental basis, on which alone that science can securely stand. How truthful is the following language of Sydenham, and how significant of the thoroughness of his conviction: 'I am satisfied,' he

observes, 'that were I to wander into the most devious tracks, untrodden by mortal step before, I should not, while following the guidance of nature, stray widely from the proper course.'

"The capacious mind and extraordinary genius of the sage of Cos have done more than give us a great principle—he labored most zealously, and with good effect, not only to liberate medicine from the absurd and mischievous heresies with which it had become entangled, and to establish it on an impregnable basis, so that, in accordance with his own expressed wish, it might be shown to be a strictly philosophical science; but he also inaugurated a new era by his successful demolition of the false and dangerous theory, that disease was of celestial origin. A doctrine more deceptive and ruinous to the true interests of science and the wants of humanity can scarcely be conceived—its inevitable tendency being to paralyze all effort on the part of the physician, and confide the cure of disease to charms and incantations—a practice which would necessarily bring into merited contempt both religion and medicine.

"It is, I hold, with the diseases of our physical system, as it is with the derelictions of our moral nature. Providence—a much abused term—has given us a mechanism perfect in all its parts—at once a demonstration of his beneficence, of his unearthly power and wisdom. But the mechanism, to maintain its integrity, is required to act in obedience to certain prescribed laws—and the penalty for the violation of these laws, all experience proves to be disease and suffering. So is it with the moral offences of man—God has made him a thinking being—he alone of all his creatures enjoys the priceless attribute, ratiocination—his very nature makes him a responsible agent, and when he errs, the fault is his; and yet I have read, and so have you, the most extraordinary verdicts in certain cases of sudden death. The inebriate, for example, with his intellect more than clouded, his reason for the time being dethroned, thus depriving himself, by his own folly, of the very means with which Heaven has provided him for self-preservation, walks into the river, and dies the death of the moral suicide! His body is found—an inquest is held—and the verdict is written—*Death by the visitation of Providence!* I cannot myself conceive of a greater wrong than this—it is imputing to the Creator the moral dereliction of the creature! Disease, then, gentlemen, is not derived from Heaven—in the language of Hippocrates—*it is not of celestial origin.*"

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An allusion to the Professor's own particular department led to the following just and feeling tribute to woman:

"While my colleagues in this institution will instruct you in their respective departments, the agreeable duty will devolve on me of directing your attention to the sufferings and dangers to which gentle woman is exposed during the most interesting period of her existence. How proud and honored are the reminiscences which woman naturally brings to our mind; memory loves to dwell on them, for they are

the very embodiment of our happiest days. Who can think of maternal love and not have his heart filled with gratitude and veneration for the devoted and self-sacrificing mother, who watched with such unwavering fidelity over his infancy, and whose constant prayer to Heaven in her nightly vigils, was—*Oh, God! Protect my child!* As the ivy fastens itself to the oak, so should the child entwine itself around the bosom of its mother; there should be but one heart between them, and every throb of that heart should be for the happiness and protection of the parent, and the honor and happiness of the child.

"Woman, from her infancy to old age, is an object of constant interest, and it is not strange that a being so tender, and so full of endearments, should have called forth the admiration of the philosopher and the fervid praises of the poet. Her history is but the narrative of good deeds. In health, she is our pride; in disease, our solace; and, in the faithful discharge of her duties to society, she is the idol of all hearts. Like a ministering angel, she soothes us in affliction, and, under the depressing influences of adversity, she inspires hope, and incites to renewed effort. Who has not felt the cheering influence of her smiles, and the encouragements of her eloquence, in the dark hour of despondency? Abandoned by friends, and left to the cold charities of a selfish and heartless world, the husband of her bosom then knows how to appreciate the depths of her love and the sincerity of her vows:

> "There, drink my tears while yet they fall;
> Would that my bosom's blood were balm,
> And well thou know'st, I'd shed it all
> To give thy brow one moment's calm.
> Nay, turn not from me that dear face,
> Am I not thine—thy own loved bride,
> The one, the chosen one, whose place,
> In life or death, is by thy side?"

"Is it, therefore, not due to this self-sacrificing being that we, who know so well how to value her excellence, should labor assiduously to diminish the sufferings and assuage the sorrows incident to her sex? The duty of instructing you how to assuage these sorrows and rescue her from the perils by which she is surrounded is imposed on me, and I need not say that I shall endeavor most faithfully to perform this office. These sufferings and sorrows, if faithfully depicted, cannot fail to excite your sympathies, and, by eliciting the generous and noble impulses of your nature, urge you to an earnest and conscientious prosecution of your studies."

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The applause which greeted the allusion which we give below to the present unhappy state of our country, indicated the generous spirit which still animates the Northern breast in regard to the deluded insurrectionists of the South. We wish that we could share the Professor's confident anticipation of the gracious reception which an

expression of such a feeling on our part would meet with on the other side, but we must confess we are not so hopeful.

"Connected as I have been with this University from its very foundation, and laboring as I have done most zealously, and I sincerely trust not without some effect, for its honor and reputation, both at home and abroad, I have not the moral power to repress the feelings which crowd upon me at this moment. The days of the past are, as it were, but the records of history—if you turn to these crowded benches you will look in vain for your brothers of the South, who, in such unbroken numbers, were in the yearly habit of seeking instruction in these halls. It is true that a portion of Virginia, Maryland, Mississippi, Missouri, and good old Kentucky, are represented; but where are our friends from North Carolina, South Carolina, Georgia, Alabama, Tennessee, Louisiana? The answer to this inquiry throws a pall over my heart! Oh! the times have sadly changed—this great country of ours, which we all so dearly love, and which, in its integrity, has been the admiration of the civilized world, is now torn by internal dissensions—her interests are divided—and the *Stripes* and *Stars*, which have always led our brave troops to victory, and which, wherever seen, whether at home or abroad, have never failed to evoke the patriot's prayer—these *Stars* and *Stripes* now float but over a portion of our country. They, with that proud bird, the American eagle, are no longer the common emblem of one great united people. We have forgotten the counsels of our patriot fathers; we have ignored the history of our independence; we have lost sight of the great fact that the blood of the South, and the North, and the East, and the West, was freely shed for the achievement of our liberties. The only rivalry at that period between the North and South was, which of these two geographical sections should give most of its life's current for the repulse of the common enemy and the protection of our national independence. Invoke the memories of Lexington, Bunker Hill, Fort Moultrie, Trenton, Princeton, Brandywine, Germantown, Stony Point, Camden, Yorktown—and they will bring back to our recollection the vivid and stirring scenes of those days; they will tell how our fathers marched in solid array to meet the enemy, and secure for their children the most precious inheritance which has ever been transmitted from father to son—the *American Union*. Our people were then brothers, with one country, one hope, one destiny; but now, alas! the family ties have been rent asunder; we are arrayed one against the other in deadly strife, and this fair land has been more than crimsoned with a brother's blood! Oh! may it please Heaven to throw the mantle of its protection over this once happy country—and may we be spared further the greatest curse that can befall a nation—civil war. May our Government, through wise counsels and patriotic impulses, with the olive-branch in one hand and the Stars and Stripes in the other, by prompt and just compromises, founded upon the American Constitution, make us once again a great united people. Politicians are without hearts—their revel-feast is excitement and self-aggrandizement, and no sacrifice is too heavy if

their object can be attained. I believe, in my conscience, they would as willingly destroy the *Magna Charta* of our liberties, if necessary to their selfish purposes, as they would quietly sit down to their daily repast. The great heart of the American people, North, South, East, and West, beats for peace and the restoration of the Union. The people, in their sovereign majesty, will demand these issues—blood enough has been shed—the nation has been made desolate, our fire-sides hung in mourning, and the very heart-strings of affection broken.

"Is there no hand among us to pour the balm of Gilead into the wounds of our bleeding country? No voice, which, in tones of kindness and fraternal love, will say to our erring countrymen—Brothers! in a moment of frenzy you have struck at the heart of your mother—but she, true to the instincts of a devoted parent, asks you to repent, and return once again to her embraces! Language like this, it seems to me, would accomplish much; it would not only bring back the sober thoughts of our Southern brethren, but it would kindle anew the reminiscences of our early history. Their love for the old flag and its associations—the recollection of our early struggle and the glories which followed it—the contemplation of the beauties of this great Republic before rude hands were raised for its destruction—all these things would burst upon them as a dream; they would soon realize the delusion and wild impulse under which they had acted, and thus gladly return to the old household. May the sacred ashes which repose on the banks of the Potomac, under the venerated shades of Mount Vernon, remind us, both North and South, of our duty, and so impress us with the lofty patriotism of the Father of his Country, as to make us resolve that not one solitary stone of the arch, which gives support to the national fabric, shall be loosened from its foundations—not one star dimmed nor one stripe removed from that glorious banner, which has never yet gone down in dishonor in any equal contest with a foreign foe!"

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"The profession which you have adopted is one of peace and kindness—its emblems are benevolence and good-will—its purposes all that enlightened philanthropy will at once recognize as entitled to the best consideration of man; its pride is not in the desolations of war, nor in the sanguinary deeds of senseless ambition; and yet the battle-field itself is filled with the records of its glory and its triumphs; not triumphs over a fallen foe, but triumphs over disease and death. There is, it is true, nothing dazzling in the practical and every-day duties of the medical practitioner; how strikingly, for example, do his ministrations contrast with the *éclat* of the forum, or the proud bearing of the warrior, who, stimulated by love of country, pushes on the enemy, and makes by his deeds of daring the field of carnage still more frightful, covered, as it already is, with the slain and the wounded. Amid the shouts of victory, and the wild booming of the deadly cannon, the physician is occupied in a more humble, but not less glorious, work. He, like the good Samaritan, in all this glitter

of arms and thirst for blood, is seeking for the sick and dying. He forgets the noise and tumult of the scene; regardless of all personal danger, he devotes himself faithfully, and with true Christian heroism, to the performance of his humane duties. Here he amputates a limb, there he dresses a wound; here, again, he slakes the thirst of the dying soldier, and, peradventure, lets him die as a brave soldier loves to die—amid the folds of his flag!

"Ours is a glorious profession, for it is one of glorious deeds; it is a pursuit of self-sacrifice, for it is one of constant peril. When pestilence sweeps the land, and blanches the cheek of many a stout frame, the physician is in the midst of incessant vigils; and if, as it often happens, he fall in the performance of duty, it may be that the only flowers which spring from his grave are those which have been watered by the tears of his widow and orphan children!"

The discourse of Prof. Joseph M. Smith, at the Twenty-third Street School, was a comprehensive view of the entire subject of Hygiene, its uses and its abuses, our knowledge of it and our ignorance of it, its relations to men in masses and to men as individuals, in the town-house and in the country-house, in the mansion and in the hovel, in the church and in the tent. The measure which it urged—namely, the establishment of a chair of hygiene in our medical colleges, and the principle therein involved of making medicine, as far as in us lies, a preventive rather than a remedial art—is one most deserving of attention, and we trust that the Trustees of his own college will not allow the hints of the Professor to fall unheeded. As it is probable that the address will be printed entire, we abstain from giving any quotations from it.

New York Ophthalmic School.—Dr. Mark Stephenson delivered the Introductory to his *Eleventh* Course of Lectures on the Eye, its anatomy, pathology, operations, treatment, &c., at the New York Ophthalmic Hospital, corner of Fourth Avenue and Twenty-eighth Street, on the 24th ultimo, to a large and appreciative audience, composed of physicians and medical students from the different medical colleges in the city.

After welcoming one and all of the medical pupils to the New York Ophthalmic Hospital, he stated that the Institution was never in a more prosperous condition than at the present time, averaging 1,000 patients per annum, and numbering over 300 graduates since its organization. He next proceeded to the discussion of the qualifications required to constitute a scientific and skillful Ophthalmic Surgeon.

AMBULANCE CORPS.—As the attention of the public has been directed lately to this subject, and the idea has obtained that there is

no regularly organized system for the control and management of ambulances, we publish the following General Order, issued early in August. The order was prepared by Surgeon Jonathan Letterman, U. S. A., Medical Director Army of the Potomac. Its operation has been so satisfactory that, with a few slight alterations, it has the approbation of the officers who have had the opportunity of experiencing its advantages. It is right that Dr. Letterman's plan should be properly accredited.

AMBULANCE CORPS, HEAD-QUARTERS, ARMY OF THE POTOMAC, CAMP NEAR HARRISON'S LANDING, VA., *Aug.* 2, 1862. *General Orders No.* 147.

The following regulations for the organization of the Ambulance Corps, and the management of Ambulance Trains, are published for the information and government of all concerned. Commanders of Army Corps will see that they are carried into effect without delay:

1. Ambulance Corps will be organized on the basis of a Captain to each Army Corps as Commandant of the Ambulance Corps; a 1st Lieutenant for a Division, a 2d Lieutenant for a Brigade, and a Sergeant for each Regiment.

2. The allowance of ambulances and transport carts will be—one transport cart, one four-horse and two two-horse ambulances for a Regiment, one two-horse ambulance for each Battery of Artillery, and two two-horse ambulances for the Head-Quarters of each Army Corps. Each ambulance will be provided with two stretchers.

3. The privates of the Ambulance Corps will consist of two men and a driver to each ambulance, and one driver to each transport cart.

4. The Captain is commander of all the ambulances and transport carts in the Army Corps, under the direction of the Medical Director. He will pay special attention to the condition of the ambulances, horses, harness, &c., requiring daily inspections to be made by the Commanders of Division Ambulances, and reports thereof to be made to him by these officers. He will make a personal inspection once a week of all ambulances, transport carts, horses, harness, &c; whether they have been used for any other purpose than the transportation of the sick and wounded and medical supplies; reports of which will be transmitted through the Medical Director of the Army Corps to the Medical Director of the Army every Sunday morning. He will institute a drill of his corps, instructing his men in the most easy and expeditious method of putting men in and taking them out of the ambulances, taking men from the ground and placing and carrying them

on stretchers, observing that the front man steps off with the left foot, and the rear man with the right, &c. He will be especially careful that the ambulances and transport carts are at all times in order; provided with attendant drivers, horses, &c., and the kegs daily rinsed and filled with fresh water, that he may be able to move at any moment. Previous to, and in time of action, he will receive from the Medical Director of the Army Corps his orders for the distribution of the ambulances, and the points to which he will carry the wounded; using the light, two-horse ambulances for bringing men from the field, and the four-horse ones for carrying those already attended to further to the rear if the Medical Director considers it necessary. He will give his personal attention to the removal of the sick and wounded from the field, and to and from the hospitals; going from point to point to ascertain what may be wanted, and to see that his subordinates (for whose conduct he will be responsible) attend to their duties in taking care of the wounded; treating them with gentleness and care, and removing them as quickly as possible to the places pointed out, and that the ambulances reach their destination. He will make a full and detailed report after every action, of the operations of the Ambulance Corps.

5. The 1st Lieutenant assigned to the Ambulance Corps of a Division, will have complete control, under the Commander of the whole Corps and the Medical Director, of all the ambulances, transport carts, ambulance horses, &c., in the Division. He will be Acting Assistant Quartermaster for the Division Ambulance Corps, and will receipt and be responsible for the property belonging to it, and be held responsible for any deficiency in ambulances, transport carts, horses, harness, &c., pertaining to the Ambulance Corps of the Division. He will have a traveling cavalry forge, a blacksmith, and a saddler, who will be under his orders, to enable him to keep his train in order. He will receive a daily inspection report of all the ambulances, horses, &c., under his charge, from the officer in charge of Brigade Ambulance Corps; will see that the subordinates attend strictly to their duties at all times, and will inspect the corps under his charge once a week; a report of which inspection he will transmit to the Commander of the Ambulance Corps.

6. The 2d Lieutenant in command of the ambulances of a Brigade will be under the immediate orders of the Commander of the Ambulance Corps for the Division, and have superintendence of the Ambulance Corps for the Brigade.

7. The Sergeant in charge of the Ambulance Corps for a Regiment

will conduct the drills, inspections, &c., under the orders of the Commander of the Brigade Ambulance Corps, and will be particular in enforcing rigidly all orders he may receive from his superior officers. The officers and non-commissioned officers of this corps will be mounted.

8. The detail for this corps will be made with care by commanders of Army Corps, and no officer or man will be selected for this duty except those known to be active and efficient; and no man will be relieved except by orders from these Head-Quarters. Should any officer or man, detailed for this duty, be found not fitted for it, representations of the fact will be made by the Medical Director of the Army Corps to the Medical Director of this Army.

9. Two medical officers from the reserve corps of surgeons of each division, and a hospital steward, who will be with the medicine wagon, will be detailed by the Medical Director of the Army Corps, to accompany the ambulance train when on the march, the train of each division being kept together, and will see that the sick and wounded are properly attended to. A medicine wagon will accompany each train.

10. The officers connected with the corps must be with the trains on a march, observing that no one rides in the ambulances without the authority of the medical officers, except in urgent cases; but men must not be allowed to suffer, and the officers will, when the medical officers cannot be found, use a sound discretion in this matter, and be especially careful that the men and drivers are in their proper places. The place for the ambulances is in front of all wagon trains.

11. When in camp the ambulances, transport carts, and Ambulance Corps will be parked with the Brigade, under the supervision of the Commander of the Corps for the Brigade. They will be used on the requisition of the regimental medical officers, transmitted to the Commander of the Brigade Ambulance Corps, for transporting the sick to various points and procuring medical supplies, and *for nothing else.* The non-commissioned officer in charge will always accompany the ambulances or transport carts when on this or any other duty, and he will be held responsible that they are used for none other than their legitimate purposes. Should any officer infringe upon this order regarding the uses of ambulances, &c., he will be reported by the officer or non-commissioned officer in charge to the commander of the train, all particulars being given.

12. The officer in charge of the train will at once remove anything not legitimate, and if there be not room for it in the baggage wagons of the regiment, will leave it on the road. Any attempt by a superior

officer to prevent him from doing his duty in this or any other instance, he will promptly report to the Medical Director of the Army Corps, who will lay the matter before the commander of that corps. The latter will, at the earliest possible moment, place the officer offending in arrest for trial for disobedience of orders.

13. Good, serviceable horses will be used for the ambulances and transport carts, and will not be taken for any other purpose except by orders from the Head-Quarters.

14. The uniform of this corps is—for privates—a green band two inches broad around the cap, a green half chevron two inches broad on each arm above the elbow, and to be armed with revolvers.

Non-commissioned officers to wear the same band around the cap as a private, chevrons two inches broad, and green, with the point towards the shoulder, on each arm, above the elbow.

15. No person will be allowed to carry from the field any wounded or sick—except this corps.

16. The Commanders of the Ambulance Corps, on being detailed, will report without delay to the Medical Director, at these Head-quarters, for instructions. All Division, Brigade, or Regimental Quartermasters having any ambulances, transport carts, ambulance horses, or harness, &c., in their possession, will turn them in at once to the Commander of the Division Ambulance Corps.

By command of

Major-General McCLELLAN.

S. WILLIAMS, Assistant Adjutant-General.

— We select the following description of the Springs of Vichy from one of Prof. Charles A. Lee's interesting letters to the *American Medical Times:*

"There is no country in the world where mineral waters are held in higher estimation than in France. This is shown by the fact, that the preservation and management of all the important mineral springs are under the direct control of the government, and form a distinct bureau under the minister of agriculture, commerce, and public works. They are now under the immediate charge of M. Nanta, Chief of the Division of Mines and Manufactories. He is aided by a *Consulting Hygienic Committee* consisting of nine members, of which M. Rayer, Dean of the Faculty of Medicine and Physician in ordinary to the Emperor, is president. Thirteen other physicians of eminence are designated by government to aid in the deliberations and consultations relating to mineral waters; and their names are annually published in connection with the other officers of State. Besides this, the *Im-*

perial Academy of Medicine has a permanent standing committee on mineral waters, consisting of six of its most distinguished members, besides a leading chemist. Besides these, there is an *Army Council of Health* under the minister of war, who have a voice also in regard to the use of mineral waters; of this, M. Vallant is President and Medical Inspector.

"There are, in all France, one hundred and sixty-five mineral springs of greater or less celebrity; the most important of which, already stated, belong to and are controlled by the Government.

"Vichy may undoubtedly be placed at the head of these, if we consider the reputation it enjoys, and the number of invalids who annually resort hither to make trial of its waters. The Emperor may be said to have taken it under his especial patronage, as the Empress has that of *Eaux-Bonnes*, for he occasionally takes up his residence at Vichy in July, and protracts his stay till late in August, or rather, till the great national fête of the 16th of the month. It is well known that he has been somewhat of an invalid for several years past, and it is generally believed that he finds the use of the waters extremely beneficial. Some idea may be formed of the popularity of the waters, when I state, that up to the 15th of September, 1861, 16,440 strangers had visited the place, and up to the 20th of August of the present year, 15,483 patients had registered their names, besides 1,324 servants who accompanied them. These, as the register shows, came from every country in Europe, and a considerable number from North and South America, and the West Indies. There can be no doubt that some fashionables are attracted hither by the presence of the Emperor, but the vast majority to try the medicinal effects of the waters.

"There is nothing attractive in the appearance or situation of Vichy; it is a hot, dusty place, far more so than our Saratoga, while its surroundings are far less agreeable. It consists of the old and new town; the streets of the former narrow and irregular, while the houses are mean and ugly; but the new portion is better laid out, though still without much order or regularity, the houses being built of the same light-colored sandstone which is universally used all over France. It lies on the left bank of the Allier, a moderate-sized river, in summer occupying a tenth part of its ordinary channel; nine hours by express train from Paris, on the Orleans line of railway. There are numerous *grand* hotels; everything is grand in France; even the principal spring here goes under the name of *Grande-Grille!* The price of board, including rooms and the use of the salon, is from one

to three dollars or more per day, according to extent of accommodations. A patient, however, as at our own watering-places, can adapt his expenses to his means. All the hotels have a *table d'hôte*, but the patient can resort to a restaurant, and thus live at less than half the expense. There are some establishments chiefly patronized by the fashionable, who resort hither for gambling or amusement, such as the hotels Guillermin, de Paris, Germot, &c. Lodgings generally have to be secured in advance; one-half the residents seem to be in the confectionery line, for their shops are filled with pastilles and sugar plums, made with Vichy salts, sugar, and flour, or gum and '*sucre d'ogre*,' a 'digestif alcalin,' very much in vogue.

"The springs, nine in number, were first taken possession of by Napoleon I. in 1810, who opened a park, and authorized the acquisition of the necessary land. The large establishment was erected in 1820, but it was not till 1845 that the government took entire control of the waters. The second thermal building was erected in 1858. These are large and commodious, and display considerable architectural taste. There are 306 bath rooms, and 39 separate rooms for *douche* baths, which seem to be greatly in vogue. In 1853, the government sold 100,520 bath tickets, and sent out 361,000 bottles of the water. In 1857, 170,405 tickets were given out, including 27,000 gratuitous, and 700,000 bottles of water sold; in 1861, 280,000 bath tickets sold, and 1,250,000 bottles of water sent out and sold, and all this in addition to the immense quantity of the dry salts, extracted from the waters, and the *pastilles*, made for the government from the same salts, and distributed over the kingdom. Thus it will appear that these mineral waters are a source of no small revenue to the government, and are annually becoming more and more profitable. The presence of the Emperor and the increasing pecuniary value of the waters has given quite a spur to improvements recently; manifested by the formation of a new park and ornamental grounds on the banks of the Allier, the construction of a new suspension bridge, the exterior of the railroad from St. Germain des Trosses to Vichy, and the erection of many handsome seats and villas in the neighborhood. I visited the large establishment for extraction of the natural salts, which is in charge of a special agent appointed by government, and every precaution is taken to prevent fraud by adulteration or substitution, and the same of the water sent out in bottles. So extensive is this distribution, that there is scarcely any part of the world where the natural Vichy water, or its salts, cannot be had. The remedial properties must be reserved for my next letter."